

LC 1046

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121.

# VOCATIONAL COURSES

IN THE

Los Angeles City High Schools

Los Angeles City High School District

School Publication Number 41

February, 1922



LC 1546  
C26 L62

## Where Our High Schools Are Located

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### Senior High Schools

FRANKLIN—820 West Ave. 54.

GARDENA—Gardena, California.

HOLLYWOOD—1521 N. Highland Ave., Hollywood, California.

JEFFERSON—38th and Hooper Streets.

LINCOLN—3625 N. Broadway.

LOMITA—Lomita, California.

LOS ANGELES—4900 Country Club Drive.

MANUAL ARTS—42nd and Vermont Ave.

OWENSMOUTH—Owensmouth, California.

POLYTECHNIC—400 West Washington St.

SAN FERNANDO—San Fernando, California.

SAN PEDRO—San Pedro, California.

TORRANCE—Torrance, California.

VAN NUYS—Van Nuys, California.

WILMINGTON—Wilmington, California.

### Junior High Schools

BERENDO—1145 Berendo Street.

BOYLE HEIGHTS—602 S. Soto Street.

CENTRAL—451 N. Hill Street.

LAFAYETTE—1515 E. 14th Street.

McKINLEY—4420 McKinley Ave.

SENTOUS—1205 West Pico Street.

THIRTIETH STREET—151 West 30th Street.

VIRGIL—Corner 1st St. and Vermont Ave.



## Preface

This bulletin is a descriptive course of study of the vocational subjects taught in the junior and senior high schools of Los Angeles. It will serve a double purpose: It will clarify the ideas of those entrusted with the responsibility of organizing and teaching these comparatively new types of work since it sets forth the scope of each line of work, the several steps or processes in accomplishment; it also contains a descriptive account for the information of students and parents of the several lines of vocational opportunity being offered, so that those seeking to prepare themselves for a particular occupation may know the possibilities for training to be had in the public schools of Los Angeles.

SUSAN M. DORSEY,  
Superintendent of Schools.

Los Angeles, Cal., February, 1922.





## **Introduction**

A boy or girl applying for a position is usually confronted with the embarrassing question, "What can you do?" The average employer in no sense underrates educational training; usually, he believes in it and sees future possibilities in boys and girls who have had the advantage of school training. The employer, however, expects immediate service and production from his employees, realizing that "the life of all business is profit." Thus, the question, "What can you do?"

This bulletin would direct attention to vocational training in the Los Angeles Public Schools, which has for its aim, the training of boys and girls who have made a choice for specific occupations; also, prevocational training for the adolescent boy or girl who has not yet made a vocational choice through a study of the occupations and short exposure courses. It further calls attention to training of an intensive nature in special co-operative classes and in evening schools for adults who desire training in a specific vocation.

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### **Fundamental Principles Governing Vocational and Prevocational Instruction**

1. Training shall be given in the leading skilled occupations of the community.
2. As nearly as possible, all applied work shall be like that found in our best modern business and industrial establishments.
3. All students trained for specific trades shall receive such training as will specifically fit them for their chosen occupation.
4. Students training for specific occupations shall be given applied mathematics, application of science, applied drawing and other related or supplemental subjects in a way that will be most useful to them in their chosen occupation.
5. Students training for the occupations shall have instruction in practical English and Citizenship, such as will insure the best type of citizenry.
6. All vocational classes organized under the Federal Vocational Act shall comply with the regulations of the State Department of Vocational Education, as outlined in the California State Bulletin Number 23.

### **Acknowledgment**

The Department of Vocational Education wishes to acknowledge its obligation to the instructors in Vocational Training, who have made this bulletin possible, through their splendid co-operation in contributing and furnishing much of the subject matter found herein.

W. SIMS KIENHOLZ,  
Director, Vocational Education.

# Vocational Courses

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## Automotive Engineering

The course in Automotive Engineering is designed to give the student a broad knowledge of the automobile trade, according to the most practical and modern methods used in commercial shops. Such methods embraces a thorough grounding in the theory of auto mechanics, supplemented by practical training in a well equipped auto shop, where the mechanical operations, from the most elementary practice job, to the more difficult jobs of overhauling motors is done. Steps in the training are as follows:

First. The student is familiarized with the tools and supplies he will be required to use throughout the entire course. That means he must acquaint himself with the standards of screws and bolts, also, the proper names, uses of tools, etc.

Second. In passing through the various stages of the work, he takes up each step in progressive order, starting from the simple jobs and gradually working up to the more complex ones. During this time there is enough theory given along with the practical work to hold the interest of the student at all times. This part of the course is known as the Automobile Laboratory Training. The equipment consists of a sufficient number of engines, transmissions, rear axles and steering gears, which are to be disassembled, inspected, re-assembled and tested. Each job is given an immediate test as soon as completed.

After the student has demonstrated his mechanical ability in this work, he is immediately advanced to the auto shop department, where he is set to work on automobiles that are sent in for repairs by private owners. Work in this department consists of everything from the smallest repair job to general overhauling. It is here the student gets into actual contact with the job, the same as he would in any commercial shop.

The demand for well trained mechanics in this field far exceeds the supply. The conditions of employment are most ideal in this vicinity.

## Use of the Lecture Room in Teaching Automotives

We are brought to believe that a part of the student's training in automotives should be along technical lines. This is accomplished through a course of lectures accompanying the



work of the shop. When he leaves school he will be given plenty of experience or trade contact. If he gets only experience in the school, he will only have experience and not very much of that, when he enters the trade. If he has had a good technical training which will acquaint him thoroughly with the fundamentals of his trade, a small amount of experience or trade contact will soon make a good mechanic of him. The great trouble with most of our automobile mechanics today is that they do not understand the principles with which they are working. If they knew just how each individual part should function, they would better understand the repairing of it.



The Automobile Industry Is in Need of Skilled Workers.

When going to work, a good repairman will first locate his trouble. This he may do by making certain tests through the process of elimination. After he has located his trouble, he sets out to repair it in a systematic way. Many times I have seen an owner take a car to the shop because it was not running just right. The "trouble shooter," "floor man," or foreman, after driving the car around a bit will say, "You must have the valves ground." The car goes to the shop to have the valves ground, and after the mechanic has spent some five or six hours grinding them, he finds that he has not remedied the trouble. Generally, he says to himself, "Well, if it is

not the valves, it must be the 'mag,' " and after spending an hour on the magneto, he goes to the carburetor. Eventually he may find the trouble, but he has to guess it and this guessing costs the owner time and money. This type of mechanic does a great deal of work with little thinking; the other does a great deal of thinking and accomplishes more with much less work and time. The teaching of fundamental principles sets the student thinking; teaches him how to think along mechanical lines.

It is difficult to teach fundamental principles to the student as he comes in contact with them in the shop. It is hard to get him to think and work at the same time. If you have him seated in the lecture room away from the noise of the shop, you can readily get him to think if he is at all interested. You can teach a boy to adjust ten different kinds of carburetors, and when he gets the eleventh one, you must teach him to adjust that one also. Give him a thorough knowledge of formation and combustion of gases, and he will soon adjust any of them. This same thing is true with many parts of the car. Teach him the principle involved, and he will soon get the practical work. These principles can be taught, and taught in a way that will be interesting to the student.

Every boy goes to class with a note book, and after each subject has been completed in class, he writes a report on it. The report, after having been corrected, and a mark given it, is placed on file in the boy's note book, together with former notes he has taken on the subject.

### **Auto Electrics**

This course aims to prepare pupils for practical commercial work in auto electrics in one year. It also lays the foundation for further work in school in the electrical engineering course.

Laboratories are provided and furnished with tools and benches for repair work. Apparatus is provided and many different ignition systems are set up and operated in the laboratory. Gas engines mounted on blocks are provided for actual operation. Machines are provided for repair and operation.

Two hours per day, five days in the week, are spent in actual work with repair, storage battery and ignition work. One hour a day is devoted to the study of applied physics, omitting electricity, the time being given to theory and laboratory. The remainder of the day is devoted to English, geometry and mechanical drawing.

#### **First Semester:**

##### **A-1. Ignition.**

Subjects: Engine principles, carburetion, magnetism, induction, timer systems, battery ignition systems, low tension

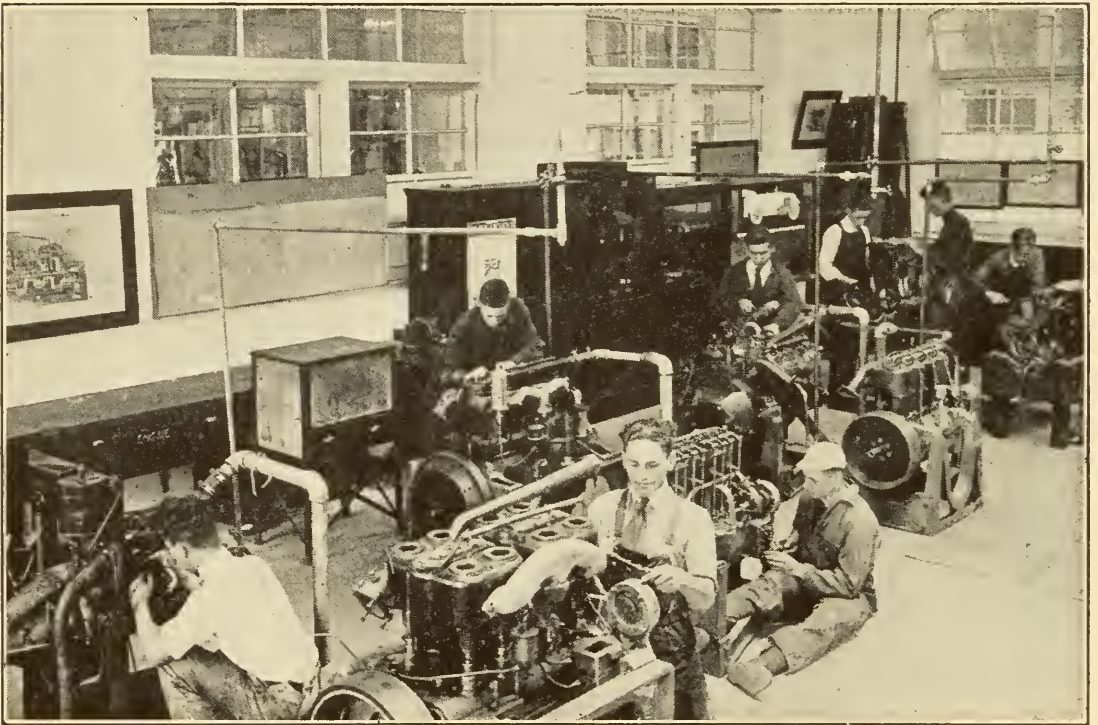


magnetos, high tension magnetos, condenser testing, coil testing and repairing, dry cells, storage battery principles and repairs, trouble finding, shop equipment, special curves and laboratory work.

## **Second Semester:**

### **A-2. Starting and Lighting.**

Generator, principles and construction, generator troubles and repairs, relay construction, control systems, voltage regulators, motor principles, construction and repairs, starting switches, motor drives, double unit systems, single unit systems, armature windings, testing apparatus, shop equipment, special curves and laboratory tests.



Very Few People Understand Starting, Lighting, and Ignition Systems  
in Automobiles.

Special training in auto electrics is offered at Polytechnic High School. Phases of auto electrics are also given at Manual Arts, Jefferson, Hollywood, San Pedro and Lincoln High Schools.

### **Forge**

Blacksmithing is a metal working trade for men and it consists of making forgings for a great many purposes. These forgings are produced by heating a suitable piece of iron or

steel to the proper temperature and hammering it, or otherwise shaping it, to the desired dimensions.

The blacksmith who works on light forgings, heats the metal on a forge, which usually consists of an iron structure provided with a forced draft upon which the fire is built. Tongs are used to remove the heated iron to the anvil, where it is shaped either by hand or under powerful machine operated hammers.

There is a wide variety of occupations in the shops that are not highly specialized, which tends to stimulate the interest of the worker. The skilled blacksmith must understand mechanical drawings, shop mathematics, the physical and to some extent the chemical properties of the various kinds of steel and iron. He must know the best methods of operating forges, furnaces, and other heat treating apparatus, steam hammers and hand tools. In addition he must possess a keen sense of size and proportion, as there is little time or opportunity to measure the hot metal as it is being shaped.

The source of labor supply is the apprentice, who is usually taken from the grammar grades. There are no provisions made for his systematic training in most shops. For this reason the boy who avails himself of a vocational blacksmithing school course, has a splendid opportunity for rapid advancement when he enters the shop. The steps of promotion are from the apprentice to the journeyman, from journeyman to foreman. A knowledge of blacksmithing is very useful for the rancher, miner, machinist, automobile mechanic, and the iron and steel salesman.

Part-time and evening courses that are of value to the apprentice are mechanical drawing, shop mathematics, business English, metallurgy of iron and steel, applied mechanics, heat treatment of steel, shop management, and forge work in the school shops along lines in which he is inexperienced.

#### Shop Work in Vocational Course:

Entering the shop, the student is taught the names of the tools and their use in the following briefly named exercises:

How to build a forge fire and care for it.

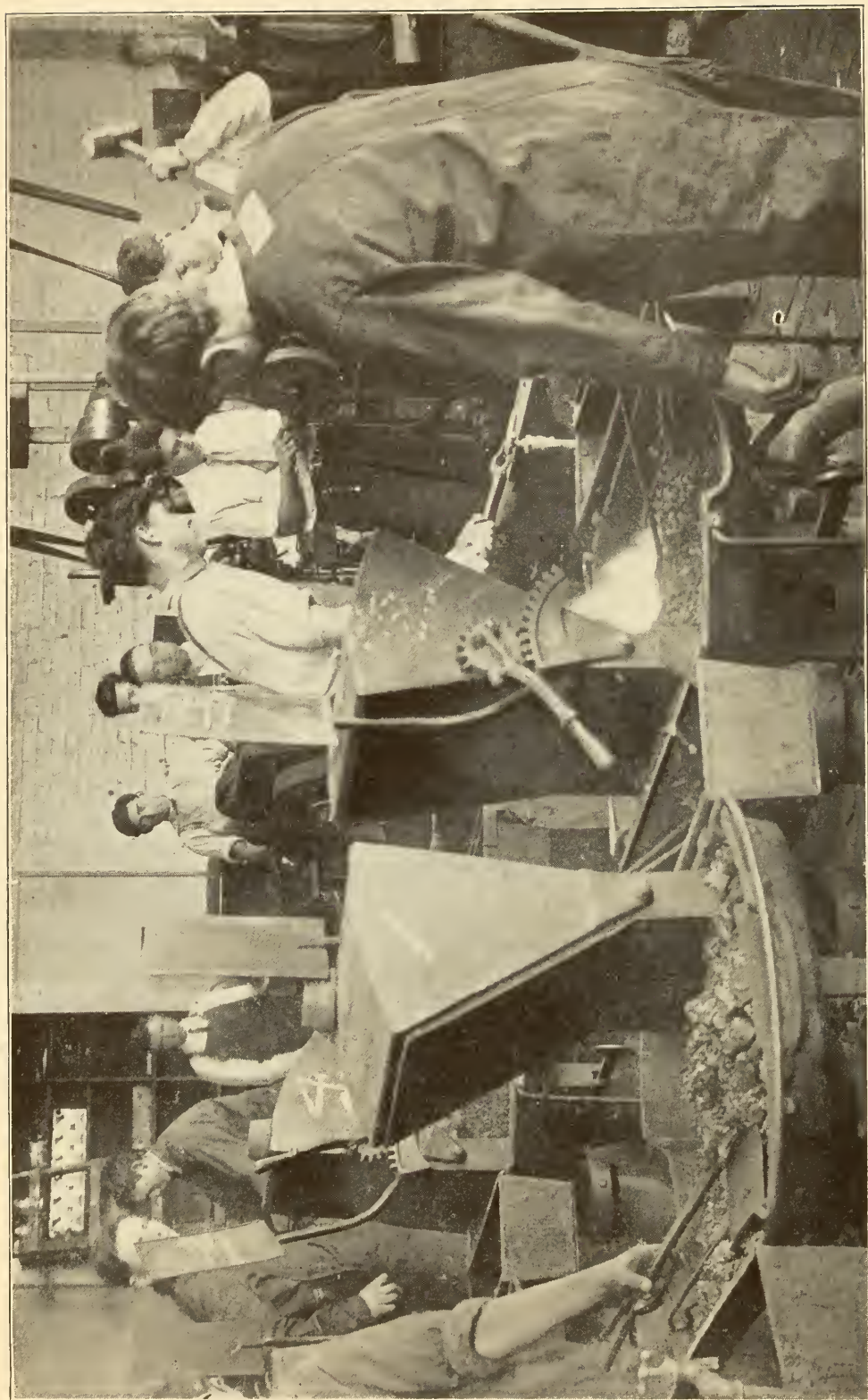
Proper hammering and drawing out exercises.

Upsetting, bolt making, welding and various kinds of tong making and chain making.

How to heat and forge high carbon steel.

Making of chisels of various shapes, also lathe and planer tools. Methods of hardening and tempering differ-





“While the Iron Is Hot.”



ent grades of steel and the use of gas and oil heat treating furnaces.

Exercises in cutlery and ornamental iron work is also included in the course.

Lectures and demonstrations are given from time to time throughout the entire course.

Forging is offered in our schools as a unit in machine shop or auto mechanic courses.

Courses offered at Manual Arts, Jefferson, Polytechnic and Hollywood High Schools.

### Machine Shop

Machine Shop practice is perhaps the most widely applied trade of any in existence. It is difficult to conceive of any activity where production is going on that does not involve mechanics or machinery of some kind. Modern transportation owes its very existence to machinery, the kind of machinery that is produced in machine shops; whether steam, electric, automotive or marine. The machinery of the machine shop, namely the machine tool industry, is the basic activity of practically all industries.

It will thus be seen that the field of application of machine shop practice is practically limitless. Like many other callings, one must have ability, application and capacity to insure a demand for one's services. The machine business is intimately bound up with accuracy and precision, without which a machine will not work properly; success can come only to those who have a wholesome respect for this truth from the beginning.

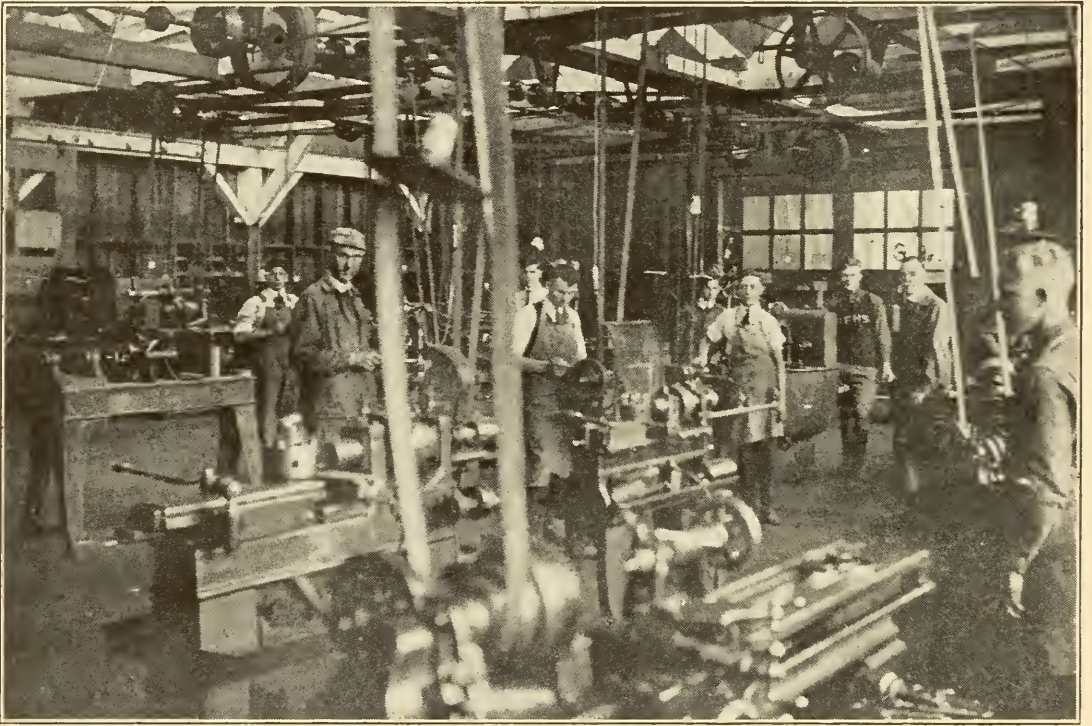
In addition to the shop work, machine shop courses include instruction in the related subjects—drawing, mathematics and science. Instruction is also given in English, citizenship and history. The object is to produce not only skilled artisans, but men who are expert in the technical content of the trade, and who are fully conscious of their duties as American citizens. Men so trained will become the leaders in this line of work, and their future will be limited only by their ability.

The course given in shop mathematics includes linear and angular measurement, theory and practice in screw threads and gearing, calculating feeds and speeds of machinery, indexing, solution of algebraic, geometric and trigonometric formulas as applied to machine shop work, applied mechanics and strength of materials.

In addition to the fundamentals of drawing, the student will receive instruction and exercises in draughting, including jig

and fixture work, cams, mechanisms, etc. The course also includes working from samples, making working drawings from the same, such as would be required in repair work; also in the repair and designing of machine tool equipment, thus giving familiarity with the most economical methods of shop production. Close correlation is maintained between the shop and the drawing room.

In general trade science the student will receive instruction and laboratory exercises in the fundamental and derived units of measurement used in dealing with the action of forces, gases, liquids, solids, heat, electricity, chemistry and heat treatment of metals.



Our Machine Shops Are Splendidly Equipped to Assist the Boy Who Wants to Become a Skilled Mechanic.

In English, History, and Civics, fundamentals necessary for a well rounded basic education are given as well as application made to their particular bearing on the trade; for example, history of machinery in general, mechanical terms, and English as used in the technical content of the trade. The course in citizenship embraces civics, the development of modern democracy and democracies, political science, and the labor audit.

Courses are offered at Lincoln, Polytechnic, Manual Arts, Jefferson, Hollywood, Gardena and San Pedro High Schools.



## Sheet Metal

The course in Sheet Metal is laid out and presented in such a way as will give the student a fundamental knowledge that is applicable to the several branches of the Sheet Metal Trade. While in shop practice the manufacturing processes may vary widely, the rudiments are much the same, and it is our plan to first give the student an introductory course of training which will lead up to the point where he may intelligently select for himself, one of the branches of the sheet metal trade, upon which to specialize.

This selection may be made from the following list:

- Sheet Metal Pattern Drafting.
- Cornice and Skylight Work.
- Automobile Body Building.
- Radiator Construction and Repairs.
- Tin Smithing.
- Heating and Ventilation.
- Metal Furniture Building.
- Fireproof Metal Doors and Windows
- Boiler Making.
- Coppersmithing.

The full course covers a period of four school years, and includes the necessary training in Mathematics, Mechanical Drawing, Related Science, Citizenship and Physical Training.

Sheet Metal Pattern Drawing enters largely into the problem connected with this work and since areas, capacities, quantities, costs, etc., must be carefully determined, the student finds a good knowledge of mathematics essential.

The scale of wages paid varies somewhat, with the different lines of the Sheet Metal Trade, but the skilled man is well paid. Automobile Sheet Metal workers and radiator repair men are at present being paid \$9.00 for eight hours.

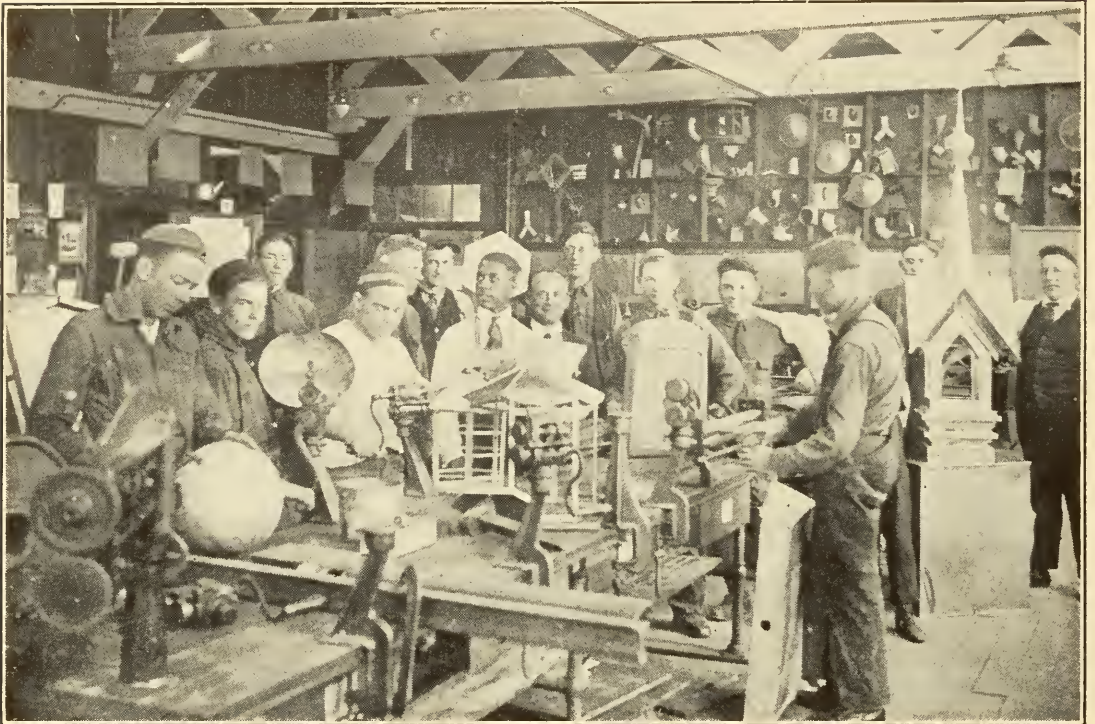
At the rate the Sheet Metal industry is continuing to grow, it will be many years before the supply of skilled workmen will be sufficient to meet the demand.

The success with which this work is being carried on in our high schools is best evidenced by the following excerpts taken from letters received from former students. One man writes: "Before I took short unit courses with Mr. . . . . at . . . . . High School, I had been fired from my job because I wasn't worth thirty cents per hour. Now I am getting 75 cents per hour, and have a steady job. When I have saved a little money to take care of my family for a little while, I am going back for some more training."

Another says: "I was a boiler maker's helper in the railroad shops when I heard of the opportunities to learn sheet metal work at . . . . High School. After four months of training, I am now building automobile bodies and am getting \$10.00 a day."

Still another says, "I wouldn't take a thousand dollars for what I learned from you in two months."

Several ex-service men are now enrolled in this course under the direction of the Federal Rehabilitation Board.



Building Automobile Radiators Is Not Difficult for These Boys.

### Foundry Work

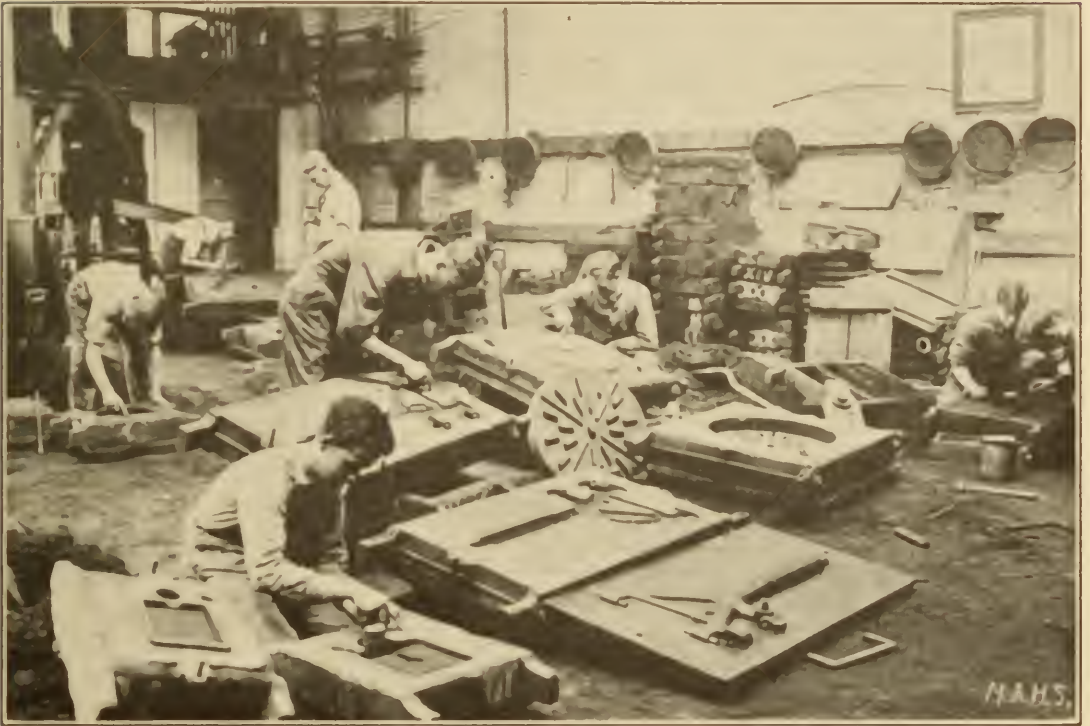
Foundry is a trade which consists of making castings. A casting may be described as any machine or engine part, in fact, any object which is given its form by pouring molten metal into a mold.

Briefly, the molding process is as follows: The foundry department is furnished with patterns from the pattern department. The pattern is placed in a suitable flask. Sand of the proper quality and consistency is then carefully packed about the pattern, which is then withdrawn, leaving an impression in the sand conforming with the outline of the pattern. The mold then receives any other treatment necessary, cores are



set, and the molten metal is poured into the space which the pattern had occupied in the sand. When the molten mass of metal has cooled, the casting is removed by breaking the sand mold, is cleaned and sent to the machine shop where it is machined and assembled with other castings. The same pattern can be used repeatedly for making identical castings, but a new sand mold is necessary for each casting.

There are four distinct divisions of the foundry business: brass and other non-ferrous metal founding, gray iron founding, malleable iron founding and steel founding. Under each division there are several operations, some of which are bench, floor, green sand, dry sand, loam and machine molding, core making, metal melting, flask making, cleaning and dressing castings and shipping.



Castings Worth Thousands of Dollars Made in This School Foundry Every Year.

It will be seen that the foundry business is of great importance in the engineering field, and that it offers splendid opportunities for the expert foundry man who has a technical training. The demand for skilled workers at this time greatly exceeds the supply. Eight hours usually constitutes a day's work and working conditions are such that by using ordinary care and judgment the worker should suffer no severe physical or nervous strains.

The source of labor supply is the apprentice who is usually taken from the grammar grades. As no provisions are made in most shops for his systematic practical and technical training, it is apparent that the boy who avails himself of a vocational school course in foundry practice should advance very rapidly when he enters the shop as an apprentice. The steps of promotion are: Apprentice, journeyman, foreman and superintendent.

A knowledge of foundry practice is of benefit to the pattern maker, machinist, foundry chemist, iron and steel salesman, mechanical engineer, estimator, and men employed in the foundry office.

The shop work in the school foundry covering brass, iron and founding consists of: the preparation of molding sands, the construction of a great variety of molds, involving instruction in sand ramming, setting gagers, venting, gating, placing risers, and setting cores; the preparation of core sands and use of core compounds, ramming sand, venting, rodding, and drying cores; cupola practice, metal mixing, charging of coke and iron, air blast and furnace linings.

### **Pattern Making**

Patterns are necessary for the making of castings of machine and engine parts, ornaments of concrete and plaster and much statuary.

As most patterns for cast objects are made from blue prints furnished by the Mechanical Drawing Department, it is necessary that the pattern maker be expert in the interpretation of these drawings. As the pattern and core boxes consist of one or more assembled pieces of wood, the workman is required to plan for strength and rapid construction, also to be highly skilled in the manipulation of wood-working tools, wood lathes, and wood-working machinery. As the method of molding is usually planned by the pattern maker, it is obvious that he should have a wide knowledge of foundry or molding processes, also some knowledge as to the method of machining of the castings.

The underlying principles of metal pattern making are the same as in wood pattern making. The metal pattern maker, however, shapes the patterns with the metal-working machines. The trade is of great importance in the engineering field and the wages are among the highest paid in the metal trades. Eight hours usually constitute a day's work. The work is clean, and not heavy. There are no nervous or physical strains, and the work is of great variety. The demand for skilled pattern makers greatly exceeds the supply at this time. There are no



provisions made in most shops for the systematic, practical and technical training of apprentices, and most apprentices are drawn from the grammar school and lower high school grades. The boy who has had a vocational course in pattern making, covering the shop practice and allied technical subjects, is splendidly equipped for rapid advancement.

Many avenues of advancement are open to the skilled pattern maker, who avails himself of advanced work in technical subjects relating to the mechanical processes, thereby fitting himself for work calling for greater skill, judgment and knowledge of the mechanical industry, than the shop-trained mechanic possesses.

The school course in Vocational Pattern Making makes for rapid advancement, and after the pupil leaves school, short unit courses in allied subjects, both practical and technical, would be of great advantage. Continuation courses which would pave the way for promotion beyond that of the skilled pattern maker would be Mechanical Drawing and Machine Design, a course in Mathematics, which will enable the student to interpret and use the formulas ordinarily found in Mechanical Data books, Applied Mechanics, Foundry Practice, Metallurgy of Common Metals, Business English Composition and Shop Management.

Shop work in Vocational Pattern Making includes Bench work, consisting of a number of exercises in wood-joint construction, which gives practice in use of hand wood-working tools; wood turning, split work, face plate, segment work, etc. The student having satisfactorily completed the above work is given practice in the operating of the wood-working machinery used in pattern making.

Early in the course the student is given an elementary course in the foundry, in order to acquaint him with the underlying principles of his trade, as related to the molding of patterns.

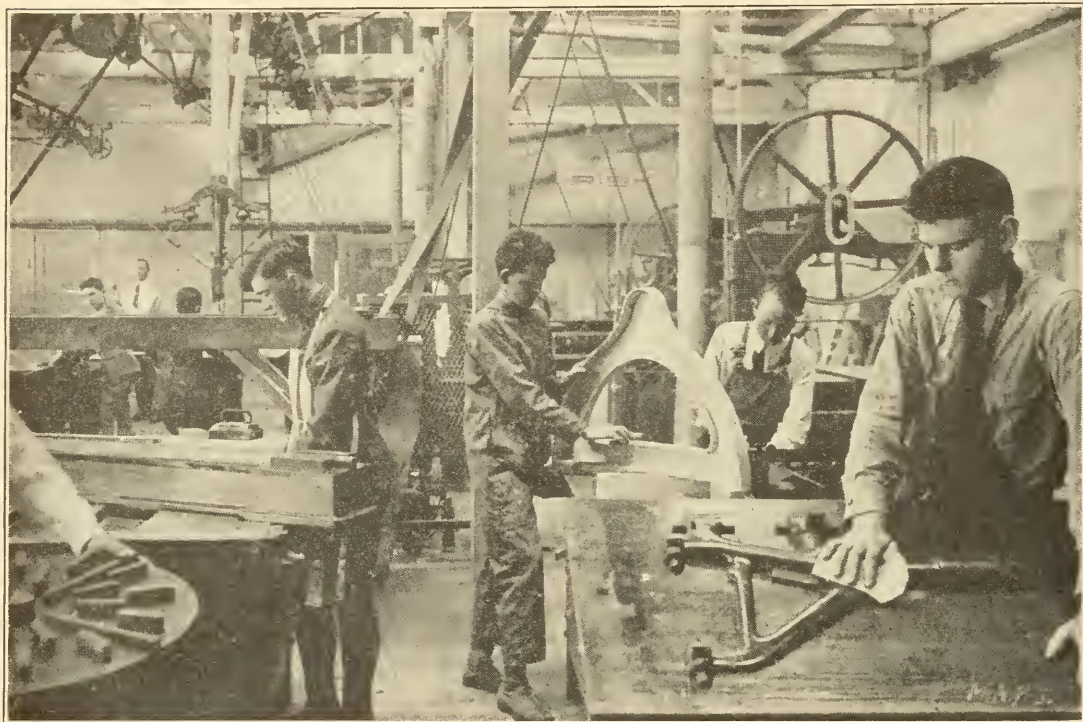
Having completed the preliminary work, the student undertakes the construction of a great many patterns and core boxes, beginning with the simple ones and advancing as rapidly as possible.

Some of the patterns made are for wood-working lathes, spur, bevel, and worm gears, rope sheaves, chain and sprocket wheels, drill presses, steam engines, pumps, compressors, stationary gas engines, auto gas engines, marine engines, and a great variety of other machine parts. This work is supplemented by a series of lectures throughout the course.

Preparatory Mechanical Drawing teaches the use of instruments, elementary Machine Detail, and the sketching of machine parts. Freehand drawings are made and a thorough training in visualizing is given.

Shop mathematics cover the review of decimals and common fractions, ratio and proportion, square and cube root, measurement and more advanced mathematics that will enable the student to use the formulas given in mechanical engineering data hand books.

Pattern work is offered at Manual Arts, Polytechnic and Lincoln High Schools.



Patterns in the Making.

### **Cabinet and Furniture Making**

A cabinet maker is one who builds cabinets, furniture, fixtures and interior finish. In the Los Angeles High Schools the designing and construction of furniture is given special emphasis. Furniture has an historical value as it is closely allied to the architecture of a country. Many of the noted furniture designers have been architects who could plan both the building and the interior furnishing.

Before entering the school cabinet shop the student must take as a prerequisite, a course in joinery, where he learns the names and uses of the different wood-working tools, becomes familiar with the characteristics and uses of the various kinds of commercial woods, makes the different joints used in cabinet construction, and completes a short course in wood turning.





There Is Always a Job for the Man Skilled in Wood Working.

The first subject taken up in the cabinet and furniture making course is furniture design. A poorly designed piece of furniture is practically worthless even if the workmanship is perfect. Shop talks are given by the instructor on the characteristics of the different period styles, and a study is made of the construction, proportion and standard sizes of tables, chairs, desks, buffets, etc. Each student is required to make a full sized detail drawing of the piece of furniture he has decided to construct. From his drawing he takes off his bill of material and mill order, then estimates the number of board feet required and figures the cost. The lumber is purchased from one of the local hardwood lumber companies, and paid for by the student. The boy is now ready to begin the actual construction of his project. The instructor gives demonstrations on the various wood-working machines, showing the methods of doing all hand tool processes by machinery. Attention is called to the safety-first precaution that should be taken to avoid accidents. When the student acquires sufficient skill in doing an operation by hand, he is permitted to do the operation on a machine. After the stock is cut to dimension and all joints are made it is prepared for finishing by smooth planing, scraping and sanding. The instructor demonstrates the gluing and assembling of a piece of furniture, showing the method of adjusting clamps to square work. A study is made of the uses and application of stains, dyes, fillers, shellac, wax, varnish, etc. Each student selects the finish that is most suitable for his project, taking into consideration whether it will harmonize with the furnishings already in the home. The student spends about one-half of the time on his individual project, and the other half on school work. Benches, tables, cabinets, etc., made for use in the city schools, furnish good examples of quantity production and give the instructor an opportunity to teach the sequence of operations and the routing of stock as carried on in a commercial shop.

Los Angeles is becoming a great manufacturing city. At the present time there are 120 furniture factories employing 3000 men and 400 women. Boys trained in the schools readily obtain employment at a good wage.

Cabinet and furniture making courses are offered in practically all our high schools.

### **Applied Electricity**

The courses in applied electricity in our high schools differ in content, years of work and methods of teaching. A descriptive analysis of a typical course follows.

The instruction in applied electricity deals largely with the

theory of electrical machinery and apparatus, and in modern operating practice. The important principles are repeated until they are mastered. The work taken up during the ninth year is prevocational, and no electives are offered during the tenth and eleventh years. The course is so arranged that should a student see his way clear to attend one more year, taking advanced electricity and other required subjects, he may do so and receive his diploma.

**Class and Lecture Room.** During the four semesters of the course the students meet in the class room five times a week. The text adopted is "Timbie's Elements of Electricity," and "Timbie and Higbie's Alternating Current Electricity." This text is followed rather closely throughout the course and problems, for home solution, are given daily. The method of instruction varies with the subject. Sometimes the entire period is taken up by recitation, sometimes half the time is taken up by lecture and the remainder devoted to recitation. The lecture is regarded as a doubtful expedient and is apt to be overdone. The lectures given are as short as possible, and everything is done to present the subject quickly and concisely. Student's notes, printed syllabi and miscellaneous collections of heterogeneous mimeograph notes can not take the place of a well written, well arranged, well illustrated and well tried text book.

Written recitations are given at stated intervals. One period each week is designated "lab quiz," at which time the various laboratory assignments are discussed and the students questioned regarding the results of their laboratory experiments, and the subjects taken up in the lectures. An effort is made to improve personal efficiency as applied particularly to studying and to school life, and to turn out students who will be students all their lives.

**Electrical Laboratory and Shop.** In the laboratory the students work singly, in pairs or in squads of three or four. When working in squads of two or more, one always acts as foreman of the squad. The foreman is responsible for the manner in which the experiment is performed and for all instruments and machines used.

The laboratory is equipped with apparatus of strictly commercial type, the machines used are of various kinds met in every day practice. The prime object of the electrical laboratory instruction, however, is to illustrate fundamental principles. Nearly all of the units are arranged in motor-generator sets and have been very carefully selected in order that they may be available for a variety of uses, thus increasing the efficiency of the investment. The sets are mounted on tables, constructed



of two inch steel pipe, of such a height that the machines are easily inspected and the connections easily made. The field rheostats and starting boxes are not secured to the tables, but are merely supported by hooks so that they may be used with any motor-generator set. The instruments used in connection with the experiment are placed upon small portable tables, rather than upon the steel tables supporting the machines, thus avoiding vibration. The machines are not permanently connected to the switch board, and all connections for the experiment must be made by the students performing the test. The apparatus is, however, in working order for the experiment to be performed in order that little time be lost. All cables are supplied with hook terminals and all binding posts with wing nuts. The method of mounting the machines is similar to that followed at Pratt Institute, Brooklyn; The Carnegie Technical Schools, Pittsburg, and Wentworth Institute, Boston.

The laboratory assignment is made in advance, so that the student may read up concerning it, and may come to the laboratory with a fair idea of what he is expected to do. Before starting the test the student must convince the instructor that he has an understanding of the nature of the experiment.

In the early part of the course the student is furnished with instruction sheets, directing in detail the handling of apparatus and giving explicit directions for taking the data, making calculations and writing reports. Later in the course the instructor exercises as little direct supervision as possible, merely preventing damage to the apparatus in the laboratory. This procedure compels the student to do independent reasoning and planning and develops the power of initiative. An opportunity for the development of individuality is thus afforded.

A neatly written report of each experiment is required of each student. This report must include all data, neatly tabulated, curves and graphs carefully plotted, diagrams and sketches of apparatus and connections when required, and a clear and concise statement of the object of the experiment, and of the significance of the results obtained. Each experiment is secured by fasteners to a printed title sheet, furnished to the student, and must be presented within one week from the time of taking the data.

The work in the laboratory runs as nearly parallel with the class room instruction as it is possible to arrange such parallelism. The sequence of experiments is chosen in such a manner that they supplement the theory or class room work. As a rule the laboratory work lags a little behind that of the class room, giving an opportunity for the necessary class room instruction.

Throughout the course the student takes shop work, given with the view of developing a certain amount of mechanical skill and to give him a certain amount of information as to machine shop and electric shop methods. The primary emphasis is, however, given to training the student in seeing the principles that are applied in shop practice. A large part of the auxiliary apparatus in the electrical laboratory has been designed and constructed by students.



More and More the Wheels of Industry Are Being Turned by Electrical Energy.

**The Applied Science Laboratory.** In this laboratory there are several features of distinctive character. Its purpose is to illuminate the work of the class room through a verification of the laws of physics; through an understanding of some of the laws of mechanics, to facilitate the comprehension of the laws governing the flow of electricity; to familiarize the student with the use of instruments of various types; to determine the limitations of theory and to give the student some experience in conducting experimental investigations.

Instruction is given in the principles of practical mechanics underlying the electrical industry, such as the forces acting in machines and structures, simple machines, transmission of power, efficiency of machines, strength of materials, hydraulics, steam engines and boilers, internal combustion engines.

Nearly all of the apparatus thus far installed in the applied science laboratory has been constructed by students, and is of a size to command their respect. In the study of forces the student often works with hundreds of pounds, rather than with ounces. The same general plan of carrying on the work is followed in both the applied science and electrical laboratories.

**Electrical Drawing and Design.** The power of mechanical drawing for strengthening the habit of exact thinking, and for training a constructive imagination is well known. The ability to think and work accurately is the basis of efficiency and is absolutely indispensable in the electrical industry. The value of drawing as a discipline in this respect can hardly be overestimated, and is made no small part of the course in applied electricity. The first year's drawing is arranged in a way that stimulates the interest of the student and covers the use of instruments, lettering, sketching, orthographic projection, intersection of surfaces, working drawings, blueprinting, etc. The second year's work leans more toward design and consists largely in making wiring diagrams, switchboard layouts, shop drawings and details of electrical machinery.

Courses in applied electricity may be had at San Pedro, Polytechnic, Manual Arts, Lincoln and Jefferson High Schools.

### **Industrial Chemistry**

Industrial Chemistry follows the regular work of the first year in Chemistry. It is designed especially for the student who does not expect to take up a college course.

This course starts with quantitative analysis. The unknown amount of a chemical is solved by the titration method, or that of precipitation and weighing.

As the oil refineries and sugar refineries use the Baume method, the work in this will also include the principles of the specific gravity bottle, Westphal balance, pycnometer and acidometer.

The underlying principles of ordinary laboratory work found in the other industries of this locality are taken up and the student made proficient in them.

This is the age to utilize by-products. A proper incentive along this line will be a great stimulant to any student. Especially when trips are taken to such plants as the local cotton seed oil mills, or the garbage reduction works. For the students to take trips to other manufacturing plants and see how the laboratory is relied upon to guide and watch over the output of the factory is part of the plan for this course. Noth-





Industrial Chemistry Plays an Important Part in Modern Industry.

ing will arouse their interest in chemistry so much as these weekly trips.

Any student completing this course should easily qualify as a laboratory assistant in any of our industrial plants that employ expert chemists. Here he may learn the whole method of operation of the plant, and if he has the ability, may easily place himself in line for a better position, such as foreman and ultimately in a higher position.

Instruction in Industrial Chemistry may be had at Hollywood, Manual Arts, Los Angeles, Polytechnic and Lincoln High Schools.

### **Fire Assaying**

Fire Assaying is a line of work open for men who are able to assay, with accuracy and speed, gold, silver and platinum ores, also with less accuracy, lead and copper. This work may be located at the mines or in assay laboratories in cities or places adjacent to the mining regions.

It is necessary to take the sample of ore from the mines, prepare it for the assay, perform the operations of assaying and determine from the results obtained, the exact value of the ores tested. The schools are prepared to offer a course that will fit a young man to take the position of assayer in any of the places mentioned. These positions are fairly remunerative, offering \$125 a month or more.

The vocational course in fire assaying does not require as much chemistry as a preliminary to the assaying of ores, as does the regular course in assaying. Students who seem to have the ability to become proficient in the mechanical work of assaying are well justified in taking this course. Most of the work is done in the school laboratory, although students are made familiar with the field through visiting nearby mines where instruction in taking samples is given. Enough mineralogy is taught with the course to enable students to treat ores without preliminary trial.

This training may be had at Polytechnic High School.

### **Printing**

Printing presents a most favorable reply to the query, "Does this give me the broadest training, mentally and otherwise, and admit of fair compensation?" This trade is recommended to those who aim high in the walks of life and wish to apply themselves to a vocation which marks the pathway of many prominent figures in world affairs.

Printing requires creative ability, constructive imagination, mechanical skill, and an artistic sense in type and color de-



signs. The student should have the qualifications of patience, taste and ingenuity.

There is a constant demand for reliable, industrious apprentices, especially those who have had intensive technical and practical training in a well-conducted school printing plant.

A beginner in vocational printing should have finished the eighth grade; should have a good command of English, and of arithmetic, including fractions and decimals. It is better to begin setting type with the ninth grade, taking two semesters of progressive exercises in the technique of topography, mostly straight reading matter; studying the various trade terms, different indentions, paragraphing, syllabication, capitalization



Many of America's Great Men Have Been Printers.

and style. Much of this year's work might be profitably done under the supervision of the English Department, the printing instructor devoting his attention to the mechanical and artistic details.

At the close of this year, a student with a passing grade, might be given a chance at linotyping. A natural adaptability united with good English training should enable a student to acquire skill enough to hold a beginner's job in twenty weeks, four periods a day, 400 hours. There are five linotypes in the Los Angeles schools, which would provide this

opportunity for ten students in the school day, or twenty students a year. It is questionable if half this number are actually entering the trade from the schools as linotypers.

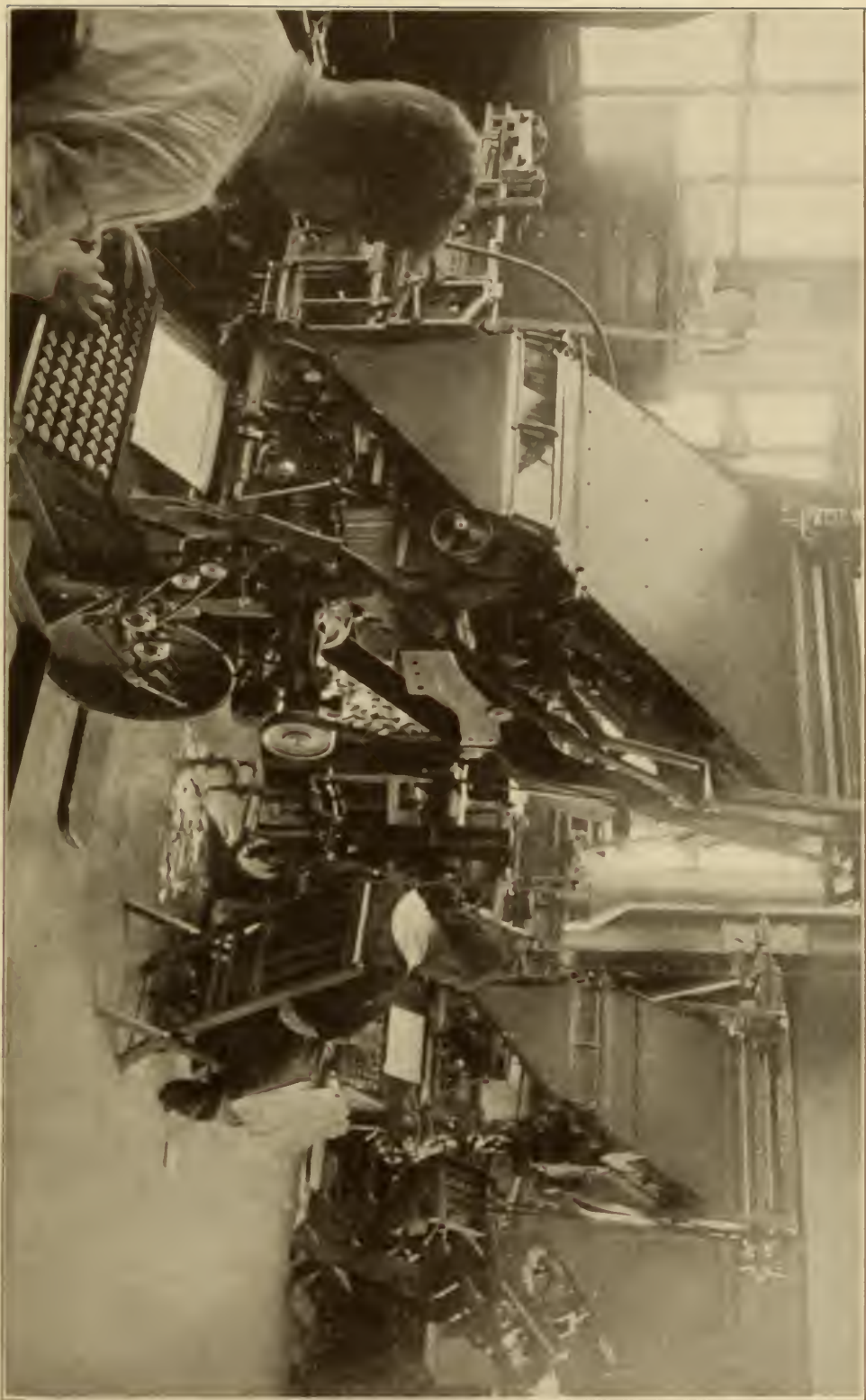
A student who does not yet care to take up the linotype, can, after receiving a passing grade in setting type for forty weeks, be qualified to enter the trade as an apprentice job compositor. An additional year on the job and book composition with five week periods in paper handling and cutting, stonework and imposition, platen press feeding and makeready (just enough to obtain a general view of the relativity of the different branches), should fit a student to earn "two-third's wages" and to win rapid advancement to the status of a journeyman.

The Printing trade with its allied branches gives employment to at least three thousand people in Los Angeles. The year 1920-1921 brought an enormous increase of business for this industry, and printers are now so scarce that good workmen receive more than the \$39 per week, which was granted by the master printers to journeymen on July 1, 1920.

The working conditions in the printing trade are better than in many other occupations. Since the employment is exclusively indoors, climatic conditions do not hinder regular work, although the summer is a dull season. Old offices were frequently unsanitary, but now printing offices are well lighted, pleasantly located and sanitary. Printing has been regarded as a somewhat unhealthful employment, but the long lives of most Los Angeles printers prove that a false idea. Strong eyes which can work well under artificial light are desirable in those entering the trade.

Printing, as the word is ordinarily used, designates, in reality two distinct trades, composition and presswork. Old time printers understood both branches, but under modern conditions in large city offices, an employee is either a compositor (properly speaking a "printer") or a pressman. There are platen, cylinder and web pressman, named from the kind of press on which they are employed; and there are machine and hand compositors. The hand compositor, or job printer, is most typical of the printing trade.

Machine operators, or compositors, are employed on machines casting either a single letter, as the monotype, or a line of type, as the linotype. The monotype machine requires both an operator and a caster, the latter needing knowledge as a machinist, rather than as a printer. A knowledge of hand composition is very useful to a machine operator, but is not absolutely indispensable, as was once the idea. Machine composition has an especial appeal to girls, and women operators are becoming every year more numerous. It requires less



The Linotype Machine Has Added Speed to Printing.



physical exertion and is cleaner work than any other branch of the trade, and usually better paid. The high initial cost of typesetting machines and demand for their output makes it desirable to keep them busy under fast operators, and high proficiency is required. Ordinarily, a fast stenographer will make a fast operator.

The job printer makes choice of arrangement, size, and kind of type to be used in setting up copy to be printed upon paper of a specified size in accordance with conventional usage, or in accordance with special instructions from the foreman. He "makes up" linotype and monotype set matter, which, with type, leads, slugs, rules, borders, ornaments, etc., constitute the material he handles. Little "straight matter" (ordinary reading matter) is now set by hand. His tools are of a very simple nature. His range of work runs from professional, society and commercial stationery to books of all sizes, billboard posters, etc. A good job printer is, as a matter of course, an advertisement compositor and a newspaper makeup man, only requiring adaptability for a change. In the modern division of labor, many good job printers know little of the imposition of book forms, or even of simpler "stone work." This is a decided check toward further advancement.

The school printing offices can give a student some knowledge of the trade in a two-period a day course for one semester. Whatever he learns will assist him materially in securing an apprenticeship in a commercial printing office, as the school work is practical from the first. In press work a bright boy of suitable age, willing and anxious to learn, may be taught in one semester to be a fairly competent press feeder and earn in a commercial office, during his vacation, from \$15 to \$20 per week. Some of the high schools of this city have had nine to a dozen such boys working each summer, although, until 1920, not for the wages named above.

In machine composition, more rapid advancement in the school can be made, but the difficulty of obtaining work in a commercial office for a partially competent operator is considerable. The pupil at machine composition will find it an advantage more than others to become as proficient as possible in the school shop before applying for work outside.

For furnishing a pupil with an all-round knowledge of the printing trade at large, in contrast to the one branch which would furnish his only chance to learn in a large city office, the school printing plant is invaluable. A course of part time in school and part in commercial printing offices for wages, according to the plan introduced by some public-spirited Los Angeles employing printers, enables pupils to earn money while

learning the trade, and receive high school graduation credits for the work done for wages the same as if it had been done in the school printing office.

A pupil continuing his school work while learning the trade will find, when he becomes a journeyman printer among others, after graduating from school, that his school life and learning have given him a culture, lacked by his fellow workmen who have not had the same advantages. This places him directly in line for advancement, as well as gives him a broader life in every way. On the employer's side it is hoped to elevate the personnel and general tone of the craft through the school printing offices.

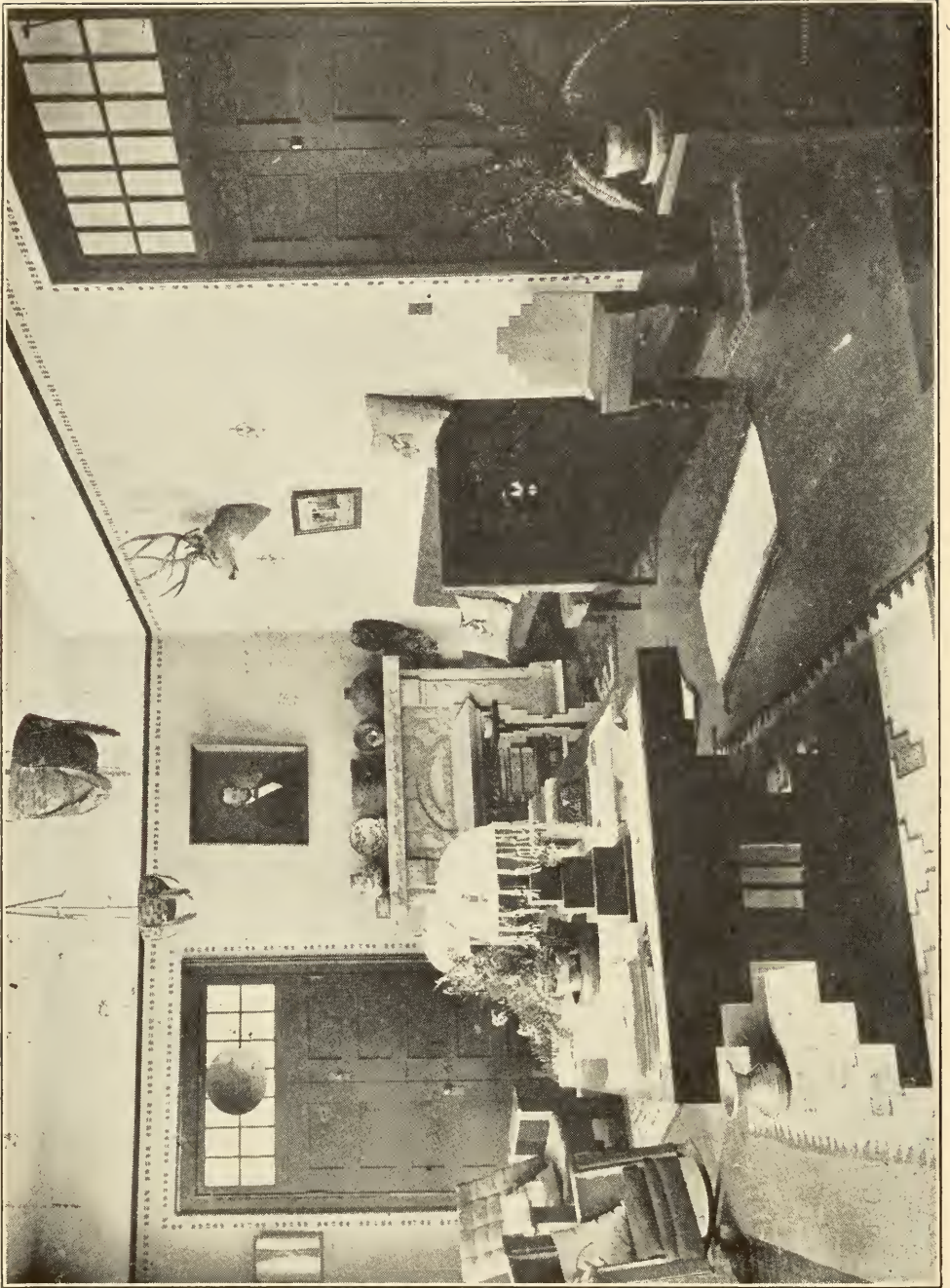
Training for the printing trade may be had at Jefferson, Manual Arts, Lincoln and Los Angeles High Schools. Short unit courses in printing are offered at Sentous, 30th Street, Lafayette, Central and McKinley Junior High Schools.

### Trade Art

Trade Art is distinctly and essentially an expression of Fine Art specifically done for remuneration. In other words, the only difference should be that Fine Art is an expression of the artist's feeling or emotion with no immediate regard for future remuneration, while Trade Art, or Commercial Art, is first bargained for and the stipend agreed upon before the work of art is done. An order is generally given for Commercial Art to be worked out according to the wishes of the buyer, while the fine artist paints or works as the mood comes over him. Many would, and do, draw a line of distinction between the aims of commercial and fine art, but the development should be the same, otherwise they both would fail. The right thing in the right place is always successful art, whether it be a choice of the right color harmony in landscape or the correct value in a portrait; or whether it is the correct type on a show card to advertise a piece of silk, or a sale of washboards. In all cases, the right application and expression should be used in terms of art principles, adapting them to the various expressions of Trade Art, and Art in Daily Life. Without the knowledge of Art Principles, one is always groping for something tangible, seldom getting anywhere.

Since these classes have started, there has been a marked growth in numbers as well as in the standard of the work, and there has developed many more lines of Trade Art than at first. The study includes, first, a general knowledge of many branches of the Arts, and after a term or two the students find themselves in their work, and then specialize in the one line of art which they can do best and enjoy doing the most, until





Imaginative and Creative Powers Are Essential in Trade Art.

they become proficient enough to earn a livelihood. During vacations they have opportunities to try out their abilities and many times they come back for post-graduate work to become more proficient.

A typical course includes a serving of apprenticeship and sometimes a skillful mastership of the following subjects which are taught individually to each student:

1. Textile Design. Study of rug, carpet and linoleum, drawn to scale.
2. Commercial Illustration in pen and ink, and wash. Color second year.
3. Lettering with brush and pen. Show cards and Book Lettering. Manuscripts and Tabulation.
4. Metal Design for copper and jewelry. Lighting fixtures.
5. Furniture Design and Picture Frames.
6. Novelty work, designing boxes, toys, Christmas cards, etc.
7. Costume Design, including newspaper work in pen and ink.
8. Theatrical Design. Costumes for the plays of the schools are often designed in these classes.
9. Interior Decorating. This includes sketches in wash and the making of furniture design and many other branches. One class designed an entire room with furniture, lighting fixtures, draperies, sofa cushions, for a gentlemen's club.
10. Wall paper design.
11. Art Glass and Decorative Figures.
12. Stage Scenery. One class designed two complete new and original sets of scenery, working them out on scale on the model, and afterwards painting them on the stage.
13. Poster and Book Cover Design.

Poster Design requires a good knowledge of design, and, if possible, accurate knowledge of human anatomy, a good feeling for color and color value. Much work in the classes is in the form of posters. There are a number of students from these classes who have graduated and are doing theatrical lobby work for the best moving picture houses in the city.

Batik work has been added to Trade Art instruction. Girls

particularly are interested in this phase of art work and ready positions and splendid remuneration await those who become proficient.

If a student has a natural aptitude for careful work in art and will be patient, he can accomplish enough in four years' time to make him successful after he graduates.

A special Trade Art course is offered at Lincoln High School. Other schools offering Trade and Commercial Art are Manual Arts, Polytechnic, Los Angeles, Jefferson, Hollywood and Franklin. Some Commercial Art is offered also in our Junior High Schools.

### **Mechanical Drawing**

Mechanical drawing is a very essential part of all technical industries, and, as such, offers exceptional opportunities to students who are desirous of entering any technical line of work. For those who are already engaged in such work, the thorough mastery of mechanical drawing is a certain road to promotion.

The work of a mechanical draftsman consists in preparing from a rough draft, or from freehand sketches, a finished working drawing. From this, a tracing is made on cloth, and from the tracing any number of blueprints are made.

The working conditions are usually pleasant, the hours of labor short, the work varied and interesting, and the opportunity for promotion excellent. The wages vary in different localities and with industrial conditions, but may be roughly stated at from \$80.00 to \$200.00 per month. A designer or superintendent may receive a much larger salary. The demand for draftsmen is also variable and depends upon business conditions; but it can be safely said that there is always a demand for highly trained men in this line of work. At this particular time the demand is greater than the supply.

The draftsman should have some knowledge of forging, pattern making, foundry and machine shop practice. He should also be able to make mathematical calculations pertaining to his work and to read and write intelligently about it.

A course in vocational drawing should consist of not less than two years of intensive study of the theory and practice of drawing, together with the accompanying academic studies and shop work. The first year project work consists of lettering, freehand sketching, geometrical construction, projection, intersection, development of surfaces, simple working drawings, tracing and blueprinting. The second year's project work includes drafting problems peculiar to the trade for which the student is preparing.



Mechanical Drawing is offered in all our Senior High Schools. Lincoln High School is offering a special two-year vocational course in Mechanical Drawing. Mechanical Drawing is now made a unit in prevocational training in all our Junior High Schools.

### Architecture

Many boys and girls are interested in planning buildings and homes. The different styles of Architecture in our large



public buildings, the doors, the windows and the inside finishing are highly interesting. A four-year course is offered in Polytechnic High School in Architecture. This training means not only formal drawing fitting for an architect's office, but is the preparation needed in all forms of the building trades and contracting. This training fits to, or is correlated with, such trades and professions as the following:

Buying and Selling of Building Materials.

Buying and Selling of Furniture and Furnishings.

Contracting in all forms.

Designing of buildings, gardens, furniture, furnishings, electric fixtures, etc.

Structural Engineering as applied to buildings.

Girls and boys are eligible to this full four-year course from any school district.

Different phases of this course are taught in the following schools Lincoln, Los Angeles, Hollywood, Manual Arts, Jefferson and Franklin High.

### **Nautical Trades**

Boat building and navigation have taken on an added local importance with the expansion of shipping and ship yards at Los Angeles Harbor. Thousands of men now find employment in these occupations at this busy port. This has resulted in a large measure from the necessities of the war. However, there can be no doubt that with the expansion of trade since the war, Los Angeles Harbor will continue to be an important shipping and ship building port.

### **Boat Building**

Boat building as taught in the San Pedro High School has to do with the building of wooden vessels from the smallest size up to those 40 or 50 feet long. There is no definite line of differentiation, except that by a small boat is ordinarily meant one too small for anything except inshore work.

The building of wooden boats is one of the oldest trades, yet it has seen changes, principally in new tools, machinery, and methods of fastening the wood parts together. Boat building calls for good taste in design, sound judgment, a keen, discerning eye, and the correct use of tools. The boat builder can use all the ordinary wood working tools and still not have enough, with the result that he frequently has to make special tools for his own use.

Boat building is a complicated trade. Whereas in steel ship building a man can frequently become an expert in a few

months, or even a few weeks, at some special part of the trade such as riveting, the building of wooden boats requires much more training and further a knowledge of boat building conditions for a number of years past. The supply of well trained boat builders in this country is not equal to the demand. Even though the steel ship yards were to stop work now, builders of wooden boats would still be needed.

Boat building has many branches, the larger the boat, the more varied the types of skill demanded in the construction; first is the designer or naval architect, then in order, the boat builder, painter, plumber, caulker, rigger, steam fitter, elec-



trician, gas or steam engineer. Boat building is not an especially exhaustive kind of work and employment is steady for a good worker. Eight hours is a day's work and the wages at present are \$5 to \$8 per day.

San Pedro High School offers a good practical course in elementary boat building. About eight boats of different types are built each year. The boats constructed here are necessarily small, but the construction of these small boats is essentially the same in principle as that of the large ones. Any boy finishing the course in boat building at this school would be able to go into one of the local boat building plants on good pay. A



boat builder who has a reasonably good knowledge of mathematics and mechanical drawing would be able to work up to the position of designer. Such a position offers a large field and good pay for well trained men. The following is an outline of work in this subject:

1. Choose the type of boat to be constructed, and decide the size and design.
2. From the drawings proceed to lay down on a floor the full size drawings of the boat, showing the cross sections at different points.
3. Make the section molds and templates.
4. Make the keel, stern, and stem, and fasten together.
5. Place the molds straight fore and aft and at right angles to the keel, and nail on temporary ribbands.
6. Bend the ribs, usually after steaming them, and place them in the boat; fasten temporarily to the ribbands.
7. Nail on planking. Put on the deck and finish the interior.
8. Plane off the outside of the boat and paint it.

### Navigation

Navigation is the science of determining the position of a ship at sea, and of conducting a ship from one position on the earth to another.



Finding the Position of a Ship at Sea.

There are three general methods of locating a ship: (1) when near the coast by bearings and distances from known

objects on charts constructed to represent the earth's surface; (2) by course and distance made good from a known position, involving the principles of plane trigonometry; (3) by observation of heavenly bodies, involving the principles of spherical trigonometry. While independent in theory, all are used practically in the course of a voyage from one port to another distant port.

This study aims to train the student in the use of the instruments, tables, charts, manuals, etc., by the aid of which vessels of the Mercantile Marine are navigated, so that he may be as well prepared as possible to complete for an officership in same. The study further consists of calculations, plotting of nautical charts, and field practice in taking observations.

This training may be had at San Pedro High School.



Attractive Salaries Are Paid Expert Chefs in Our Large Hotels.

### **Chef Cooking, Service and Restaurant Management**

To train boys to fill the following positions: (1) Cafeterias: salad makers, servers on steam tables, dessert and pastry makers, vegetable and meat cooks. (2) Catering: Light catering in private houses, workers in catering establishments. (3) Chefs, cooks and assistants for hotels, restaurants, dining cars, steam ships, construction camps and cantonments. (4)

Executives: Buyers, assistant managers and managers for hotels, restaurants, dining cars, etc.

Investigation shows that there is a large demand for trained workers. The chefs here now are for the most part European and this supply will be curtailed on account of the present conditions.

There are no other institutions outside of the public schools offering this training, and the apprenticeship system is not practiced in this country. The possibilities for advancement are therefore unlimited.

Salaries for above positions begin at \$50.00 per month with board. Many chefs are receiving \$500.00 or more.

There will be splendid opportunities for graduates from this course, possessing as they will, education in the academic subjects in addition to technical knowledge. A good eating place is always in demand in every community. The person possessed with ambition in addition to training and experience in this work, can become a proprietor of such an establishment. The practical work will include the following:

- a. Cleanliness of person, materials and equipment.
- b. Beverages: tea, coffee, cocoa, chocolate, etc.
- c. Preparation and cooking of vegetables.
- d. Griddle work: toast, griddle cakes, waffles, butter cakes.
- e. Deep grease frying: fish, meats, croquettes, oysters and methods of preparing the same.
- f. Broiling and steaming: chops, steaks, game and fish.
- g. Roasting and baking: joints of meat, game and fish.
- h. Broiling, steaming and stewing of meats, game and fish.
- i. Sauteing and braising of meats, game and fish.
- j. The making of soups, broths, consomme and chowder.
- k. Carving and serving of the above dishes hot and cold; the making of sandwiches, salads and garnishing.
- l. Hotel and restaurant butcher work (for boys).
- m. Fish and game butchering: cleaning and cutting with different methods of cooking.
- n. Making of breads, pies, cakes, cookies, puddings, meringue, ice cream, and sherbets.
- o. Sanitation: care of refrigerators, sinks, pipe connections, grease traps and ventilation.



- p. Refrigeration temperatures for the proper care of meats, game, fish, vegetables and milk.
- q. Table setting, the care of silverware, linens and uniforms.
- r. The making of menus; taking of inventories; cost and selling price of everything sold.
- s. Food conservation and preservation.

This course is offered at Lafayette Junior High School.

### **Agriculture**

These courses are designed to meet the practical problems and needs of farm life and are open to boys over fourteen years of age who will be given high school credentials and aid in obtaining employment when the courses are completed.

The following branches are included in the courses: (1) Field Crops and Soils (Agronomy), (2) Live Stock, (3) Dairying, (4) Orchardring, (5) Insect Pests and Diseases, (6) Farm Mechanics, (7) The Culture and the Improvement of Home Grounds, (8) Poultry, (9) Apiculture.

Farming is an occupation that presents great variety of opportunities, in fact, the work changes not only with the hour but also with the season. Many problems are constantly arising in farming to make the work very interesting. Numerous opportunities are offered which give a broad field for advancement. The boy may develop into an orchardist, a dairyman, a stockman, a general farmer, a poultryman, a ranch foreman or superintendent, or a tractor mechanic.

As a student in this course, the boy takes a piece of land or some live stock to manage and develop. The prosperity and very existence of the growing crops and animals depend upon him. The buildings, fences and machinery must be kept in good repair, and the land must be kept in a high state of fertility. In return he receives the profits. All these things make it necessary for him to possess a keen sense of responsibility, a good business head, and a willingness to work and to interest himself in the project. Accounting, contracts, and business transactions come in as a part of his project and class work.

The wages of farm hands are good, considering the future, but not especially attractive if money, spare time and amusements are the only things considered. However, most of our boys who have been placed upon ranches are pleased with the work, with the outlook for the future, and with the pay.

A study of the making and repairing of farm machinery—a very important item in modern farming—is a part of this course.

The work of these courses may be separated into the following groups, viz:

### **Farm Science**

The fundamental principles of the sciences are studied to show how to solve the problems which are constantly confronting the farmer and this study is included and a part of all courses. General science as applied to every-day life on the farm will be emphasized as: fundamental principles of gas and gasoline engines, motors and electricity; levers, wedges and pulleys as applied to farm uses; friction, heat, greases and oils for various uses on farm implements and machinery. Crossing, selection and improvement of plants and animals will come as a part of the regular project work, as well as in the classroom. Influence of cropping and forests on climate, rainfall and conservation of moisture and erosion will come in classroom and field study. Essential elements of plant and animal food will be studied in field and laboratory. Principle and uses of Septic Tank on farms, nitrification and use of cover crops will be supplemented by field practice. Study of insect pests and methods of combating same will be taken up as these problems appear, correlating field practice with laboratory study.

### **Farm Mathematics**

This will consist of a combination of parts of arithmetic, algebra, geometry, trigonometry, formulas and tables, correlated with accurate, rapid solution of practical and applied problems on hand; such as, measuring amount of water in reservoirs and ditches, its flow and carrying power, acreage cover, depth, etc.; how to measure silos, bins, hay stacks, wagons, fields, lumber for buildings and fences; leveling and contouring fields, laying out contours, angles and rafters for certain desired results; number of different plants and trees required for different areas when optimum area of each individual plant or tree is given. Commercial forms of sales and purchases should be closely correlated with a part of the Farm English.

### **Farm English**

This will be of a corrective nature as well as directly instructive, using literary selections from natural science, farm science, rural life and rural economics. Papers will be written and reports given on topics selected from articles in agri-

cultural magazines and farm bulletins, and stories from project work. Literature dealing with farm life will form the basis of descriptions. Business letter writing will receive attention in classroom and through actual correspondence with firms or individuals such as seed houses, stock men, feed houses, colleges of agriculture. This work is given with each course.

### **I. Farm Mechanics**

Practical work in the handling of iron at the forge will be given. Simple construction and repair work will be undertaken in iron, wood and cement as regular farm problems. Assembling of farm tools and machinery. Care and uses of various farm machinery, various hitches of rope and cables. Labor saving devices for helping to keep tools in place and in order.

### **II. Field Crops and Soils**

The work in Field Crops and Soils includes a field study of all local crops and local soils and soil conditions. The texture of soils and methods of improvement by cover crops, gypsum and good methods of tillage; heavy and light soils, early and late, water-holding capacity, alkali and acid conditions and practical methods for taking advantage or overcoming or improving undesirable conditions by good farm practices. Where special types of soil, climatic conditions, limitations of water for irrigation purposes or land values are factors in determining or favoring certain phases of farming or variety of field crops, these will be studied by field and project method. The study of soils and farm crops will be closely related to methods, principles and factors involved in successful crop production, yield, cost of production, values for feed, forage, ensilage and effects on soil fertility. This work will be found of great value to students wishing to become more thoroughly familiar with all the phases of stock raising, dairying, orcharding, etc.

### **III. Dairying**

This will include a systematic, first-hand study of the local dairy farms. Feeds, feeding and balanced rations used by local dairymen together with the cost of each will be studied carefully. Milk testing, regulations, laws and methods of handling stock, milk and cream will be studied. Ample opportunity will be provided to make a systematic study of a wide range of registered dairy cattle as well as highly developed grade cows and dairies.



#### **IV. Live Stock**

Southern California has a rich possession of fine livestock. Within a short distance of any school may be found a wide range of most excellent livestock. A first-hand study of these will be made, judging, scoring, methods of care, feeding and feeds. The local conditions and national conditions, markets, values, initial cost and best methods of building up and getting started will receive systematic study as well as diseases and their control, local and state laws governing testing, sanitation, packing and registering.

#### **V. Orcharding**

Orcharding has reached a very highly practical and technical state in Southern California and affords a wide study and calls for almost unlimited ability in lines practical, scientific and administrative. Climatic conditions, soil studies, best methods of irrigation, methods of pruning, spraying, fumigating, gopher control, picking, packing, thinning of green fruit and shipping, cover crops and summer cultivation, afford timely topics of study. The many orchards in close proximity to each school afford ample opportunity for each pupil to study all phases from both practical and scientific points of view.

#### **VI. Poultry**

The study of poultry may well begin with the carrying out of a poultry project: best methods of starting for beginners; breeds of poultry and their characteristics from a utilitarian point of view, care of laying hens, feeds, feeding and housing, care of chicks, artificial and natural incubation, natural and artificial brooding; methods of controlling diseases; pests and methods of prevention; judging of breeds; culling out and building up of flocks; trap nesting of individuals—all of this work is to be first-hand, taken up timely as these problems present themselves in the regular work.

#### **VII. Apiculture**

Apiculture is already an important and highly developed and profitable industry in Southern California. Bee culture includes a study of the hive, its construction, cost, materials and equipment, a study of working bees and queens, building up strong, prolific queens, a field study of honey plants, identification and area of bee pastures, length of honey flow, locations, exposures and water, locating and leasing most favorable eucalyptus, orange, sage and bean pastures. Emphasis is placed on the important phases of bee keeping—methods

of keeping free from "foul brood," study and practice of building up prolific queens, locations of best pastures, extracting and marketing of products.

### **VIII. Culture and Improvement of Home Grounds**

This course includes the essentials of American Landscape Gardening, care of home grounds, lawns, shrubs, pruning and spraying. Pupils will be given an opportunity to prepare plans, choose materials and do the work as laboratory practice. Much attention is given to grouping shrubs and other plants with reference to favorable and unfavorable amounts of moisture, sunlight and space required by individual plants as well as color effects. The work will also include propagation of materials for use in setting.

#### **Project**

Project instruction is given to the boy through a plan and supervision of his farm work or project and through supplemental subjects in classroom. Preliminary essentials involve a careful survey on the part of the teacher of the boy's mental, physical and financial limitations. The boy's special interests should be known and how these interests and his local environment are adapted or suited to certain lines of farming. The plan should be to bring about the closest correlation between school, home and community, and the work should be both scientific and practical, involving the best farm practice of the community. This involves a correlation of the boy's ability and the task at hand. The boy enters an agreement between parent and teacher to do all the work, pay all the expenses and to receive all the profits. A good project is a good training of the whole boy—head, hand and heart.

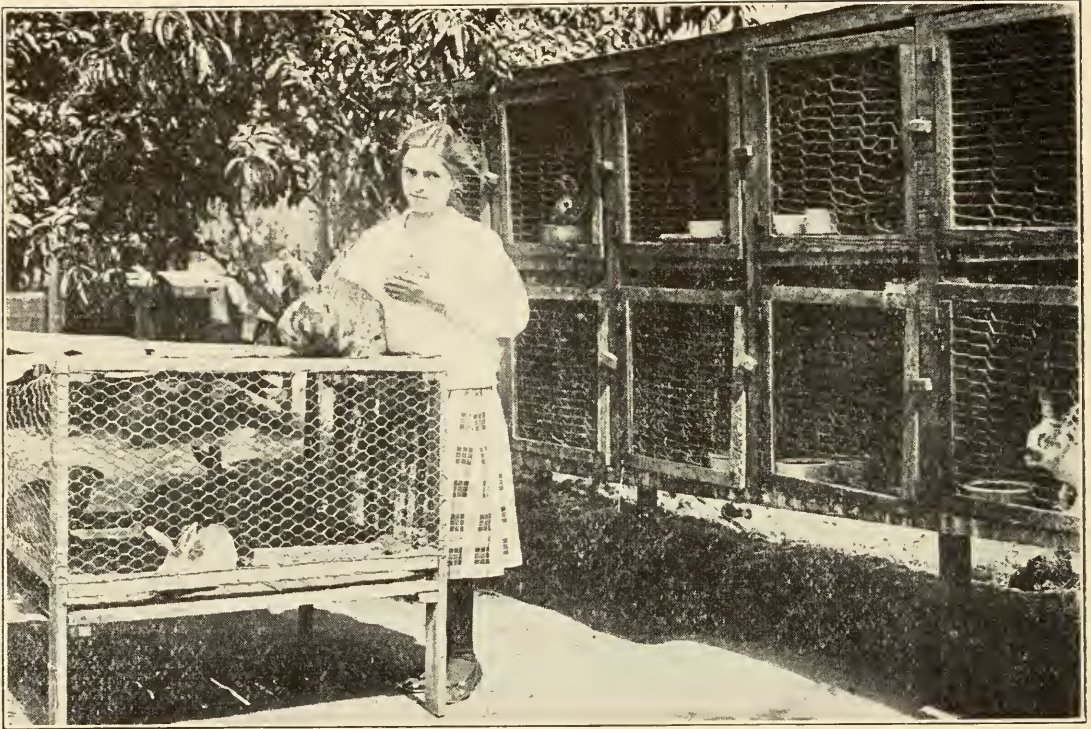
Accurate accounts are kept of receipts and expenditures to put the work on a business basis.

This course will be given at Jefferson High School, Gardena High School, Owensmouth and Van Nuys High Schools and McKinley Junior High School.

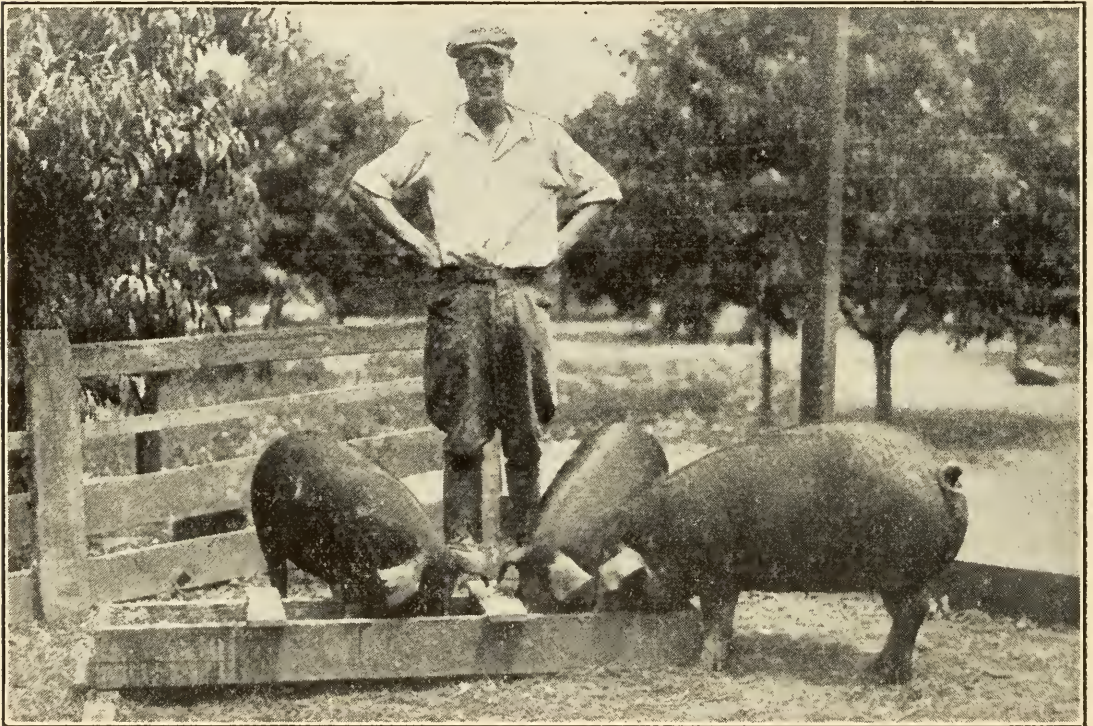
We appreciate more fully than ever before the force of Garfield's statement in the following quotation: "At the head of all the sciences and arts, at the head of civilization and progress, stands—not militarism, the science that kills, not commerce, the art that accumulates wealth—but AGRICULTURE, the mother of all industry, and the maintainer of human life."

No wide awake city can longer neglect offering in all of its High Schools as thorough courses in Agriculture as in other





Rabbit Projects Are Popular.



These Polands Are Wasting No Time Putting on Weight for Their Happy Owner.



industries, because Agriculture comes even closer to the life of a large city than any other one industry. The prosperity of cities will no longer permit the educational system to educate away from the farm and rural life—it must be reversed with ever increasing emphasis.

### Home Economics

The underlying purpose of the Home Economics Courses in the Los Angeles City Schools is to so improve conditions in the home that its members will be better nourished, more satisfactorily clothed, will have higher ideals for its sanctity and an appreciation of their moral and civic responsibilities to the community.

In the High Schools, the old terminology of terms too often confused or misused, is fast disappearing. "Domestic Art" and "Domestic Science" have been misunderstood even by those within the profession, while "Sewing" and "Cooking" are far too limited in their implication. So it follows that the nomenclature must change as it does with all new arts and sciences and that at present CLOTHING and FOODS are the most in favor.

Clothing is comprehensive enough to include such subjects as:

Dressmaking	Ethics of Shopping
Millinery	The Personal and Family
Design and Embroidery	Budget
Textiles	Laundry
Care and Repair of Clothing	

The study of "Foods" includes such topics as:

Production of Food	Dietetics
Preparation of Food	Food Chemistry

Under titles of Household Management, Home Making, Home Problems, etc., are taught such subjects as:

Household Physics	Nursing
The Home and The House	Economics of the Home
Mathematics Applicable to Home Problems	

Throughout these courses an attempt is made to point the way to the vocational opportunities they present and to give girls such a broad general training that they may be able to meet the situation presenting an unusual difficulty, and to fit in to many phases of vocational work rather than only one. Interesting "follow up" work indicates that the girl well-trained in principles, when competing in the commercial world,

goes far ahead of the girl who has been drilled to do a certain piece of work as perfectly that she can at once secure a position on leaving school. The latter, limited in her knowledge, at first possesses more skill, but she is in greater danger of a blind alley job.

Through this policy of teaching basic principles, to be followed by the development of skill in whatever direction the occupation later demands, the Home Economics Departments are not only sending girls from the High Schools better fitted to engage in the home making profession but to take prominent places in many trades and the industries important in our economic life today.

### **Dressmaking**

This course correlates with the art department in its free-hand drawing; its designs for braiding, beading, embroidery, stenciling, and batik work; and its study of the theory of line, form, and color with special application to hats, gowns, etc. Dresses, underwear, wraps and other garments are first planned in detail; principles of construction and technique reviewed and further developed, and after the article is completed, it is judged by the class as to its suitability to the wearer and to the occasion; its usefulness; and its cost compared with the retail price of a similar garment. Students are encouraged to make clothes for friends, neighbors and shops and to show the vocational value of a course of this type. One high school reports one hundred and ten garments made voluntarily out of class time for actual money return and this from a class of twenty-five during one semester.

In addition to the actual class instruction, field trips are made to factories and department stores and lectures are given by designers, buyers and others capable of pointing the way to the rapidly increasing field for women in these lines. Courtesy as a purchaser; as a saleswoman and a study of the ethics of shopping are valuable phases of every girl's education and are given emphasis in every dressmaking course.

### **Clothing for Children**

One important phase of the garment making course is the design and construction of the layette and clothing for older children. Where there is no direct need in the home, arrangement is made to sew for the Red Cross, a day nursery or some similar organization. Often there is a demand in the community for these well made clothes.

## Millinery

This course makes a strong appeal and classes are usually over-crowded because of its popularity.

After the paper patterns of various types and styles of hats are made a design for the hat desired is drawn and then constructed with emphasis on the technique and skill necessary to compete with the shop-made article. Valuable problems in economics arise during hat making as well as many opportunities for discussion of the suitability of line, form, color, etc. Where a full course in millinery is given it includes manufacturing by hand frames of wire and buckram; covering frames; wiring ribbon; steaming and hemming silks and velvets; shirring materials; sewing on braids skillfully; making flowers of organdie, silk or other materials; and the creating of original designs based on principles of art.

Girls are taught the possibilities of the occupation within the trade such as those in Home Millinery; Parlor Millinery; Retail Millinery Stores; Millinery Departments in Department Stores; Wholesale Millinery; Factory Work; Salesmanship; Instructors; Flower Makers, etc., etc.

With training of this nature, girls will find employment awaiting them in the millinery trade and when followed up during dull seasons by short unit courses, advancement as well.

## Textiles

Since women are the spenders it is recognized with ever-increasing certainty that they must be taught to know what they buy and the course in textiles provides information invaluable to the one buying garment materials.

The microscopy of wool, silk, cotton, linen, weighted silk, artificial silk, jute, ramie, hemp, etc., teaches a valuable means of identification, as well as reasons for the care each should receive in cleaning and laundering.

Simple, yet effective means of distinguishing the real from the false; the mixture which is sold for a pure fibre; a study of the trade names for fabrics in current use with the relative durability of each—these all help to create a class of more intelligent shoppers and the commercial world welcomes such women to its stores.

## Power Machine Work

The aim of the Power Machine Shop is to instruct the pupils in the study of the machine, its construction and care, the various seams, biases and bindings, neatness in fastening all threads on wrong side to prevent ripping, speed with accuracy



and neatness. Shop talks range from discussion of wages according to piece work, value of work done on different special machines, comparison of wages and time with machine and hand work of all kinds, to suitable materials for use, color combinations and qualities. Special emphasis is laid on the value of piece work, the saving of time and the value of doing each step just right. The outline of the course, in addition to practice on various types of machines—stitchers, punchers, seamers, includes the making of overalls, store aprons, butcher frocks; manufacture of fancy goods, covers, scarfs, hats, etc.



The aim is to instruct the students thoroughly, in as short a time as possible, in all the fundamental principles and in the practice of the trade, so that they may, upon graduation, possess ability and confidence, and be of immediate and practical value to their employers and receive a fair remuneration at once. Speed and efficiency as commercial employees should soon follow.

### Laundry

Since much of the cleaning of clothes is a chemical process, a study of hard and soft waters; methods of softening the former; soaps and their effects on the standard fibres; the correct removal of stains; and the cautions necessary in us-

ing inflammable cleaning solution are all taught with the help of the chemical laboratory and practical application at home and in school.

Visits to demonstrations of modern home and commercial laundry machinery are made and the positions open to girls in this field are studied.

### **Foods**

A study of food is made under such sub-headings as:

Production and its relation to economic conditions.

Composition, digestion, use to the body and preparation.

No longer is this branch of Home Economics merely cooking. The actual preparation of food is to this course what the experiment in the chemistry laboratory is to a Chemistry course with the exception of one unit which puts emphasis on institutional cookery. A constant and ever present ideal is the improvement of home conditions for the betterment of the individual and community.

Vocationally the girls are led to realize the positions awaiting them in this very wide field of opportunity.

### **Dietetics**

This course teaches the food values; the balanced meal; the proper feeding of the well, the sick and convalescent; and the care and feeding of children. It prepares for advanced work in hospital training and is invaluable to every girl whether she enters the vocational field or the profession of home making.

### **Household Chemistry**

A very great many processes of the home are dependent for their success on a knowledge of their Chemical nature, hence, the requirement of a year of Chemistry for every girl in the Home Economics Course.

A term of inorganic chemistry is followed by one largely organic in content, and includes such topics as: the carbon and nitrogen cycles, analysis of foods, their preservation and adulteration; textile chemistry; waters, soaps and laundry; the chemistry of leavening, etc.

Chemical positions open to girls in the world are investigated such as:

Textile testers in large department stores.

Food analysts.

Sugar refining chemists.

Bacteriologists.

Milk testers, etc.





Sooner or Later Girls Become Home Makers. It Is the Purpose of Our Schools to Preserve the Best Type of Womanhood and American Homes.



## Household Physics

Unfortunately girls are not encouraged to investigate, understand or even be curious about the mechanical side of life, and consequently the woman who must meet problems in plumbing, ventilation, sanitation, heating, lighting, freezing, electricity, etc., is hampered by ignorance. A course is offered to furnish the principles of household physics and is taught by a man from the shops or teacher from the physical science department.

## Household Management

This is a valuable summary of all previous work in Home Economics with an additional study of the problems relating to house planning and construction; interior decorating; household accounting and the budget, both family and personal; social and civic duties; and the ideals for a true American home.

This is an excellent course for home projects such as the superintendence of the remodeling or redecorating of one or more rooms of the home; the keeping of a personal budget; the checking of bills for family expenses; the care of the flower or vegetable garden; the taking entire charge of the house cleaning for a given time; the care of a baby for one week or longer; a study of the day nurseries of the city; a report on opportunities open to girls in the field of home or domestic service; a study of the milk supply of the city; these all provide opportunities for a broadened outlook in those phases of life which make for better communities, better homes, and better service in the homes.

## Nursing and Hygiene

These courses point to the urgent need for knowledge of the body and its care by every woman; and for a great number of nurses and dietetians to satisfy the increasing demands of our hospitals.

A few of the topics covered in such a course are:

- Anatomy; digestion; absorption.
- Sick room location, furnishing, ventilation, care.
- Disinfectants.
- Circulation; respiration; temperature.
- Personal care; skin; hair, teeth; bath.
- Making beds; changing linen.
- General directions for rendering first aid.



These Girls Are Learning to Make Their Own Hats.



Making bandages; compresses; poultices.

Burns and scalds, including burns from electricity.

Treatment for cuts and bruises; hemorrhages.

Treatment for simple complaints—earache; toothache; cramps.

Treatment for electric shocks; drowning.

Symptoms and treatment for fainting; epilepsy; apoplexy, etc.

Symptoms and treatment for common infectious diseases of children.

Care and feeding of babies.

Home economic courses are offered in all our high schools.



Every Girl Likes Pretty Clothes.

### Nursing

Our schools now offer courses in Home Nursing and Hygiene which are designed to teach personal and household hygiene, cause and prevention of disease, general care and diet for the sick, care and feeding of children, maternity nursing, including parental care, preparation for birth, after care and care of the new born baby.



The future of our nation is dependent on its physical strength. School instruction along these lines reaches not only the home, but the community at large. Nursing is not alone caring for the sick—it is knowing how to keep well.

Most of the deaths among children are preventable. Intelligent care of children, the nation's greatest asset, will produce a stronger nation, and the course in Nursing and Hygiene is offered for this great purpose.

Instruction in Nursing may be had at Lincoln, Jefferson and Los Angeles High Schools.



For Humanity's Sake.

### **Retail Selling**

Education has been very slow in recognizing its opportunities in the Retail Selling field—due, no doubt, to the fact that retail work has always been looked upon as an occupation in which anyone could engage without special preparation.

Business, too, has been just as slow in awakening to the realization that well-trained people could be one of its biggest assets; and we still find men, even high executives in stores, who cling to the old idea that education not only is no help, but is at times even a handicap in the business world. Fortunately, however, the progressive merchant today recognizes the advantage of workers with some knowledge of business principles and psychology, and frankly admits that the future success of the merchandise business depends upon attracting trained men and women for all departments. Retail selling is rapidly developing into a profession and as such requires workers with technical and systematic knowledge. This profession opens the way not only to a livelihood, but to responsible high salaried positions for those with training.

In general, there are four main sections of store organization, each with its executive and specific positions. These are as follows:

I. Merchandising.

1. Merchandise Manager.
2. Assistant or Group Merchandise Manager.
3. Buyer.
4. Statistician.
5. Comparison Shopper.
6. Designer.

II. Advertising.

1. Advertising Manager.
2. Artist.
3. Display Manager.
4. Window Trimmer.

III. Service.

1. Superintendent.
2. Personnel Manager.
3. Employment Manager.
4. Educational Director.
5. Welfare Worker.
6. Research Worker.
7. Interior Decorator.

IV. Accounting Section.

1. Controller.
2. Credit Manager.
3. Head of Auditing Department.

As merchants throughout the country are coming to realize the desirability of the trained worker, large numbers of them



are entering upon definite plans of co-operation with educational institutions, such as high schools, special schools and universities, to work out practical methods of giving better preparation for store work to boys and girls to fit them as intelligent salespeople and as executives and leaders in the world of retail selling. The complete co-operation of schools and stores is necessary to establish a satisfactory retail selling course. The school gives the pupil his theoretical training—but his practical experience under actual working conditions can be found only in stores.

At present the majority of students in our classes fill positions in department, clothing, grocery, shoe and candy stores, and specialty shops. Some have succeeded in getting positions for after school and Saturdays. We encourage them to get any kind of a job which will afford training in the selling field and opportunity of meeting the public. The teacher does "follow-up" work on the job and thus discovers the needs of every individual pupil. Stores that are taking advantage of student workers are unanimous in their praise. Almost without exception they commend their enthusiasm, alertness and genuine interest in their work—factors which mean success in selling.

As to the specific features of the work in our schools, it is very difficult to give the course of study because the work is so new and has so many possibilities. We must not forget that this vocation, though beyond the experimental stage, is still in a pioneer stage. We are feeling our way along, trying to develop the work in a manner satisfactory to the school, the store and the pupil. We endeavor to handle retail selling problems in a very broad way, realizing how varied and extensive the field is. Practically anything that pertains to life pertains to retail selling; therefore, the question is not **what** shall we **take up** in our Retail Selling course, but rather **what** can we afford to **leave out**. The store is the laboratory; hence much of the class work is based on the students' practical experience. In a general way the course covers the following main subjects:

I. Salesmanship—a course in which we discuss store problems and organization; types of customers and methods of handling them; steps in a sale; store system; care of stock. We have demonstration sales which are always of great interest and help to the students.

II. Textiles and Merchandise Topics. This includes textiles and non-textiles—the study of raw materials; methods of manufacture; collection, analysis and testing of fabrics studied. This phase affords opportunity to give information about the stock and to create in students a real love of merchandise. It



aids them in buying their own clothing wisely and economically.

III. Hygiene and Physical Education. The aim is to promote good health and develop an attractive personality; hence stress is placed on correct standing and sitting posture; poise, use of voice, personal appearance, etc.

IV. English—Emphasis is placed on the necessity for correct and convincing spoken and written English: vocabulary, sentence structure; spelling; punctuation; business letters; use of the telephone; talking up merchandise, etc.

V. Arithmetic—a study of the different features of store problems, also personal budgets, cash accounts, ways of saving money, etc.

VI. Color and Design. This treats of the application of color and design to their work—such as color combinations; appropriate use of colors in dress, furnishings and display of merchandise.

VII. In addition to the above topics, we consider in a simple way the economics of retailing; advertising; psychology; and commercial geography.

We are looking forward to the time when our young people will have the vision to see successful careers before them in the science of retail selling. The training is valuable to them in their **personal** life. As one learns to be a better seller he learns also to be a more intelligent buyer. Moreover, he is compelled to study people and through constant contact with them learn the value of consideration of others, courtesy and service. He learns how to work with people and at the same time how to live with people. He is thrown on his own resources and becomes self-reliant. It aids him to develop quick and accurate thinking, executive ability, initiative, good judgment and originality. It is a field in which one has the opportunity of using all his talents and powers.

### **Business Training, Organization, and Management**

The preparation of this course as presented in the following outline is the result of a gradual development and expansion after two years of successful teaching experience. The objects sought that justify the existence of the course may be listed as follows: To connect the student's knowledge derived from the study of other commercial subjects with the nature of general business procedure; to initiate other uninformed students from the other departments, other than the commercial, as to the departments of a mercantile organization, their

function, their correlation, and their interdependence; to narrate the various principles involved in success and to suggest a mode of procedure which will shorten the apprenticeship period and will enable the prospective employee to adapt himself more readily to various positions which he may hold. The course is to the Commercial Department what a course in General Science is to the Science Department.

In the method of presentation, the instructor assumes the position to members of his class similar to the relationship that a department head in regular business holds to the employees of his department. No class text book is adopted, the American and System Magazines and business books are used as references. The student is directed daily by various assignments which are prepared in the library; at home from the business stories in the magazines, or by special visits or investigations at original sources. A definite routine is followed. Loose leaf note books are prepared, one section is given to the filing of the home preparations as given in numerical order and designated as "H. P. I.," etc. (home preparation one), the second section contains the preparation of class notes, library references, or the reports of field trips, these assignments are filed similarly by the numbering system as "C. P. I.," etc. Reading or "collateral" cards are prepared by the student weekly, the content is obtained from the reading of library references on the subject being discussed at that particular period; notes are written on the reverse side, students later give brief business talks as a review.

The general field of business is covered. There is no unnecessary duplication of the subject matter of other commercial courses providing one agrees that the calculations in Book-keeping are not a duplication of Arithmetic or the English in Commercial Law is not a repetition of Commercial English; likewise the study of Sales or of Advertising is not a duplication of the two respective courses, but serves well as an introductory subject.

The study of the various commercial subjects are apart, each in its respective field; there is a need of instruction to co-ordinate the knowledge gained as a result of the study of these various subjects; this later development in the commercial curriculum seeks to attain that goal; experience in teaching the course proves that the course in Business Training, Organization and Management meets the requirements to satisfy the need.

**Outline of Course in Business Training, Organization and Management as Presented in the Department of Commerce:  
in One of Our Large High Schools**

**PART I**

**Ch. I. Economic Basis of Business**

Business in Early Times—Attitude towards business—Early merchant trade.

Systems of Production—Family—Handicraft—Domestic Factory: Effects of: Division of Labor: of employment. Branches of Production—Extractive Industries—Manufacture—Commerce—Transportation.

Factors of Production—Land—Labor—Capital.

Natural Factors—Power—Climate—Raw Materials, etc.—topographical.

**Ch. II Types of Business Organization**

Single proprietorship—Partnership—Corporation:

Corporation vs. Partnership; Definition of:

Creation, Powers.

**Ch. III. Interior Organization**

Chart of organization: Directors, Officers: Duties of:

Departments: Office—Order—Purchasing—Sales—Advertising—Credits and Collection—Accounting—Traffic.

**Ch. IV. Personality and Efficiency in Business**

Development of: Self-analysis—Principles of Efficiency; Application of: Habit formation—Illustration of strong personalities—Efficiency Tests; Substitution; Mental Alertness; Copying Addresses; Knowledge of English; Concentration; Memory.

**Ch. V. Obtaining a Position**

Preparation for—applying for position; application blanks; employment standards; practice interviews—Principles in determining acceptance: Points of observation to aid in promotion.

**PART II**

**Ch. I. Management**

Relation of employer and employee—systems of management: military; functional—**Personnel problems:** Training, welfare and social work; wage question: Time wages: Piece rate.

**Manager:** characteristics of—

**Problems:** Harmonizing work; creating human touch; speeding up employees; increasing production, sales, etc.



## Ch. II. Office

**Location:** Local study—Construction: Light, heat, ventilation, sound killer.

**Layout:** Straight line principles.

Office Practice—**correspondence, incoming mail** opening, handling, enclosures, cash mail, sorting and classifying, delivering to departments—**out going: stenographic work:** analyzing contents; answering; form letters; copying; applications for.

Folding—Sealing and Stamping—mailing: classification of mail matter.

**Filing:** Object—equipment—Development of—methods: alphabetical, geographical, numerical, topical, chronological—Drill in.

**Use of telephone:** answering, giving calls—manners: appliances: study of form illustrations—classification as to use in departments—**Reference Books:** Kinds:

Drill in asking and obtaining information.

## Ch. III. Accounting and Treasury Department

**Object:** Purchase, sales, financial records—Interpretation in Bookkeeping experience—practice work in filing in business papers—**Insurance:** value of—Kinds—Process—Rates—Problems—Investments: Kinds, security: Returns.

## Ch. IV. Order Department

Writing—Registering—Analyzing—Copying—Filing.

## Ch. V. Credits and Collection Department

Importance—creditman's qualifications—obtaining and using information.

Records—collection letters—Thrift.

**Loan associations:** Banks, Building companies; Morris plan.

## Ch. VI. Purchasing Department

Objects—Factors determining—

Procedure: Requisition; sources of information; classification of information; Problems in discount, follow up, duplication and distribution of purchase records.

Receiving: checking, pricing: code system, factors determining; storing—inventory taking: annual; perpetual.

Pricing of inventories. Turnover.

## Ch. VII. Sales Department

Branch—direct—mail order—

Kinds of Salesmen: as to location: retail, promoters, professions; as to article sold.

Qualifications of Salesman:—**Physical:** Health, dress—

**Educational:** Knowledge of fundamentals: **Mental Integrity;** poise; attitude; alertness; patience; ambition; initiative—**Social:** meeting customers—**Preparation:**

Study of department; of goods; of customers; of conditions.

**Kinds of customers:** Irresponsible; Discourteous; Disagreeable; Uninformed; Radical; conservative; temperamental.

**Process of Sale:** Preapproach; approach demonstration; closing.

**Rewards:** Permanency of position; promotion; controlling interest; social status—Department Store manuals; Instructions; Training; Employees or store etiquette Routine; Policy of house; house organs; bulletins, etc.

Social athletic organizations. (Introductory to salesmanship course.)

### Ch. VIII. Advertising Department

Importance—Study of ads: size, attractiveness: construction; unity; arrangement; selection of; rates; problems; value of—**amateur exercises—ethics of:** advertising principles; organizations (General insight into department as introduction to advertising proper).

### Ch. IX. Traffic Department

Purpose—Routing—Packing—Shipping: Freight; express; parcel post; Records involved.

### Ch. X. Miscellaneous

**Graphs:** Purpose of: Kinds Construction; Interpretation, collateral cards: purpose; preparation; choice of content; Review.

Special library assignments—Industrial and commercial surveys and trips.

## Commercial Work

**Aim.**—The aim of the Commercial Work as taught in the Los Angeles City High Schools is twofold—in the Senior High Schools the work is intended to prepare the students for direct participation in the business life of the community after graduation through technical and practical training in the various branches of commercial activity, while in the Junior High Schools the main desire is to give the students a knowledge of what business life comprises, with the secondary aim of so whetting their thirst for further training that they may be persuaded to remain in school for longer and more professional study later on. Consideration to the large group who cannot or do not finish either course is given by so planning all courses

that the purely business work and the informational study of business conditions are kept parallel in the earlier part of each high school course, leaving to the later school years the more strictly educational and cultural types of study. The Evening High Schools also, through well defined and broadly planned short unit courses in technical business subjects, aid materially in completing the education and increasing the efficiency of this type of student. Thus each kind of student is prepared with bread-winning power in accordance with his age and capabilities, so that in case he leaves school before graduation he will be equipped with ability of which he can make immediate practical use.

**Branches.**—The three great money-earning types of work offered in these courses are, in the order of their numerical importance, Secretarial Work, Accounting and Merchandising. The strictly professional work along these lines is given, of course, in the Senior High Schools, but enough of each is permitted in the Junior High Schools so that a student uncertain of his bent may receive enough first-hand information to enable him to direct his choice wisely for advanced study, or may be equipped with vocational ability to the extent that his age and likelihood of employment will admit. In the Senior High Schools supplementary training in such commercial subjects as Arithmetic, Penmanship, Law, Geography, Occupations and Business Administration are given in addition to the regularly required academic work amounting to about seven units of the sixteen required for graduation. In two of the larger high schools Machine Calculation and Bookkeeping are offered as parallel special professional courses ranking in time and credit with the three general types mentioned above.

**Methods of Teaching.**—In all cases the work in each type begins with regular class instruction in the particular subject taken. In the case of Stenography (Secretarial Work) and Accounting this occupies the first two years of the subject. These two years are followed—in the Senior High Schools—by one year or more of actual business work either in down-town establishments—as in the case of Merchandising—or in the Accounting work of the Student Body Organizations, where the Accounting students of the larger high schools handle and record almost \$100,000 per year received and disbursed by the Student Body's financial representatives; or—in the case of Secretarial students—by acting as secretaries to the busy school officials or by conducting a bona fide public stenography office where they carry on the varied clerical and secretarial tasks the administration of a large institution inevitably demands. In the larger high schools the Accounting students



receive an additional year of Advanced Accounting Theory after the completion of the practical work, equivalent to Sophomore or Second Year Accounting in a university.

The Merchandising students begin their practical downtown work in their third high school year, working half-days or single days per week in stores while studying Merchandising theory in regular school classes. The courses in Occupations and Business Training and Administration are directly preparatory to this type of work and give these students particularly an early insight into the workings of business processes and methods, conducing directly to their rapid advancement in practical merchandising.

All this work is socialized insofar as possible by the organization of the students by their own initiative into clubs formed partly for social purposes and partly for outside study of their particular specialty. Thus Law Clubs, Accounting Associations, Secretarial Associations, Advertising Clubs, etc., abound in all the Senior High Schools. The Advertising Clubs of the various high schools are organized further into a City Advertising Association which has regular meetings and evening programs addressed by the leading advertising and merchandising experts of the city.

From the above it will be seen that all branches of professional training in the Senior High Schools are taught in eminently practical ways, with provision made for the students receiving long training under careful supervision in the actual working of their special line. The administrative features of school organization are made to contribute directly to this and serve an educational as well as an economic end in that almost all the secretarial work done for the numerous officials in each school is the work of secretarial students, and all moneys received by student body activities must pass through the hands and records of the accounting students.

**Courses of Study.**—In the actual courses of study the different high schools vary greatly, according to their location, aim of organization, size, equipment, etc., but in the main the general scheme contemplates a first year of elementary work involving the mechanical essentials of Arithmetic and Penmanship, at least, together with English and some form of Science, or perhaps Bookkeeping. At the beginning of their second high school year students choose their major subject in Commerce, which may be either Accounting, Secretarial Work or Merchandising, and which they must carry through the remaining high school years. In case Merchandising is chosen, an elective subject—usually Typewriting—is taken to fill out the course until the third year, when the Store Practice and Salesmanship begin.

During the first two years of the high school course such related subjects as Law, Occupations, Business Training and Administration, and, in some schools, History of Commerce are undertaken, in addition to one academic subject, such as English, though in some schools even this is given the commercial slant, and appears as Business English. During the third and fourth years the commercial major subject mentioned above is frequently the only commercial subject pursued, though such related work as Economic Geography, Civics and, for prospective college students, Mathematics appear in the courses at this time. It is during these two years that the students receive the practical part of their training, which may involve election to some student office requiring financial, clerical or stenographic ability, in addition to or separate from the actual office work mentioned previously.

Graduating students from most commercial courses will have spent about half their entire high school time in commercial work, the remaining half being spent in the domain of English, History, Science, Mathematics, Shop Work or Agriculture. Frequently students of other courses elect one or more commercial subjects, and as almost every person is in daily contact with some form of business, these students' participation in the business work is actively encouraged. Such subjects as Occupations and Business Training and Administration, compulsory to commercial students, are open to all high school students, and in most schools are required of all vocational students, irrespective of the kind of money-earning power these students are acquiring.

In the Junior High Schools such subjects as Bookkeeping, Stenography and Typewriting, etc.—sometimes both—are open to students as early as the eighth grade, while Penmanship and Commercial Arithmetic are required of all commercial students in the ninth year. The Evening High Schools offer short unit courses in most technical branches offered in the day schools, and as the evening and day standards are the same, students who have failed to finish their course in day school on account of the need of employment may complete their courses in evening school, graduating from these schools with the same privileges and honors as the day school students.

**Numerical Proportion of Commercial Work.**—The commercial students in practically all our high schools constitute by far the largest single group in these institutions, the proportion in some of our large Senior High Schools running as high as forty per cent. In scarcely any of the schools is it less than twenty per cent, while in some schools, where the commercial work is entirely elective, the necessary commercial faculty is as large



as that of the English department, whose work is required for all students in school for three years. Though the per cent of commercial students remaining for graduation is frequently not more than half the proportion of commercial students enrolled, this is in itself a compliment rather than a disparagement of commercial training. This loss to the schools through employment of their students furnishes indisputable evidence that their early training has rendered them so capable of performing business service that the lure of the store or the office, with its present income and promise of future advancement, is more potent than the happy though restricted atmosphere of the school.

**School Specialties.**—Although the various high schools have much in common in their commercial work, yet withal they differ so much in their aims that a great variety of special features in various schools results. Thus Manual Arts and Polytechnic High Schools emphasize particularly special speed courses for adults and high school graduates, permitting students of mature years or definite aims to complete the entire Accounting or Secretarial Course in five months of continuous daily work. In Manual Arts also are courses permitting advanced students to complete such courses in half the regular time, at the same time taking two or three other high school subjects. The above schools are unique as well in offering complete professional courses of Machine Calculation and Machine Bookkeeping, though other schools frequently offer some training in this work as part of their practical office training. Jefferson and Lincoln High Schools, being mainly vocational schools, offer intensive work, secretarial and accounting, to younger students in the earlier high school years. In the Los Angeles High School commercial work is mainly complementary to or alternative with the classical work for which that school is notable, while in Hollywood the legal, geographic and administrative phases of commerce are emphasized above the technical or clerical. In the San Fernando Valley schools, featuring Agriculture, special courses in Farm Accounting are offered, and in the Harbor schools work preparatory to world commerce and foreign trade is featured.

**Summary.**—From the above it can be seen that the Los Angeles high schools are endeavoring to touch the commercial life of their community at all points, and through the major subjects of Accounting, Secretarial Work and Merchandising supply their students with professional training adapted to the type of livelihood most in line with their aptitudes and the demand of the local market for commercial service. They are not bound to this type of work exclusively, however, and through



the related geographical, economic, legal and mathematical branches in connection with the required academic work demanded of all students, are offering a general and cultural commercial education well worth while even if unaccompanied by technical instruction. The Junior High Schools are discovering and testing the aptitudes of prospective business men and women at so early an age that errors of choice or misdirected ambitions can be corrected before serious loss of time or effort has occurred. Through the short unit, intensive special courses for young and old in the Senior High Schools, and the many lines offered in the numerous Evening High Schools, the problem of adult education is being met as fully as possible and the great popularity of these courses in recent years has attested to the success with which they are meeting this vital though long neglected obligation.

### **The Related Subjects**

Vocational Training cannot reach a high degree of efficiency unless it includes such information as related mathematics, drawing and science. The machine shop worker would be at sea if he did not understand blueprints, for practically all information and instruction that come to him are in the form of blue prints. Blue print reading then, would appear to be an essential in the training of a machinist. The pattern worker and the sheet metal worker usually draft their own patterns. They must therefore, be able to draw. Regular mechanical drawing instruction would be valuable to them, but related drawing is what they need most. In other words, the kind of drawing needed is the sort that will help the worker in his chosen trade.

Various trades require considerable adaptation in related mathematics. The machinist trade is especially rich in mathematical content. Arithmetic assumes a new significance to the boy when its fundamental processes are applied to chucks, clamps, wrenches, V-blocks, etc. Making out bills and finding the cost of a finished product when material, labor, etc., are all considered, are immediate problems of interest and importance to the learner.

While the boy is giving his attention on how to do his work, he often asks himself why should certain results follow certain operations. In other words, he delves into the science of the job. He is constantly struck with the "Why" of the thing. For instance, the boy wishes to know why brass tubes are used in an auto radiator rather than iron tubes. Why air is mixed with gasoline vapor in a carburetor, etc. It therefore becomes a part of vocational instruction to supply the related Science that goes with the job.

The vocational student should be able to organize his thoughts into definite and clearly understood statements. By this is meant that they should have a good command of English, more particularly the kind that will be helpful to him in his chosen occupation. Applied English, therefore, should constitute a part of the vocational program.

Supplemental to the vocational training there should be training for citizenship. The duties of Citizenship should be made unmistakably clear and sacred to all those entering the fields of occupations. It is here that the enemies of society and government are occasionally found. Our students must be trained and ready to protect the society of which they are a part.

### **Industrial Mathematics**

Vocational training under the Smith-Hughes Act began in the schools of Los Angeles, about four years ago. At the same time, the attempt was made to offer courses in the supplemental subjects and during the intervening time no little thought has been given by many teachers to the formation of courses of study for the pupils who elect to follow the work prescribed by the courses of the shop. In no one of the supplemental subjects has this been more true than that of industrial mathematics. In many respects the work has been difficult. The work, for the most part, had to be handled by the regular teachers of the high school, many of whom knew little or nothing of the needs of the shop, so they were forced to feel their way in true pioneer fashion, adding or discarding material as experience dictated. The pupils came into the classes with so widely differing preparations that difficulty was experienced in finding any common levels on which they might work. It was no uncommon experience to have in the same class, boys with three years of high school mathematics, and those who had done only the arithmetic of the sixth grade, and that two or three years ago. The difficulty was further intensified by attempting to segregate the pupils according to trades.

After experiment, the plan adopted was to offer to all pupils, a course which begins with the simplest fundamentals of arithmetic, and gradually approaches the complex formulas required in actual shop practice. The special emphasis required by any trade being left to the trade instructor as the need arises.

Throughout the four terms into which the work has been divided, the thought in mind has been the needs of the pupils as they are determined by the demands of his trade. No attempt has been made to teach more than the simplest ele-

ments of mathematical theory, the emphasis being placed on the practical application of the formulas to the problems of the shop. Therefore, much subject matter ordinarily considered necessary has been eliminated.

The first semester offers a review of the principles of simple arithmetic, including fractions, decimals, percentage, square root, and ratio and proportion; the second, the principles of algebra essential to the solution of the equation (the formula); the third, the application of the formula to the geometry and trigonometry of the shop; the fourth, the study of the principles of the simple machines and their application to the machines of the shops.

In the field of industrial mathematics, few suitable text books have been available and the instructor has been forced to offer work in some form of his own devising. One of the most satisfactory plans has been the giving of the work on mimeographed sheets. These are given the pupil as rapidly as he can handle them, careful check being made by the teacher on accuracy, neatness and speed. In the end, the sheets are filed in a cover kept for the purpose, the result being a reference book of value.

The plan has advantages and some drawbacks. The teacher will find the work more difficult than in ordinary classes, where a text book is used. The continuous checking of problems becomes cumbersome and the fact that the pupils work at so many levels, necessitates much individual instruction that will probably become monotonous to the teacher accustomed to class instruction. On the other hand, the pupil may work as fast as he will, even to the extent of two semesters in one; a pupil entering late can readily catch up with the average, and best of all the instruction is largely individual.

On the whole, the plan works well for the type of work for which it is intended, the boys themselves voting that it has the old text book method beaten and requesting that "we stay with it."

### **Vocational Science**

Vocational Science must be taught so that it will enable the pupil to apply science principles to the problems of trade or industry. The vocational teacher must teach science not for the sake of science primarily, but he must teach science for the sake of industry.

Vocational Science must of necessity draw, more or less, from many of the sciences, physics, chemistry, biology, general science, but systematic study of any one as a pure science is not necessary and not desirable. A thorough study of many fundamental principles of science is vital to the understanding of the practical problem of industry.



## Selection and Application

The field of science is so large and with all so rich in material that the problem of the vocational science teacher, becomes a problem of selection and application.

He should select wisely from the large field, the subjects that come vitally in touch with the student's activity and help him to understand the principles that apply to his own problem.

## Principles and Problems

As far as possible the study of scientific principles should be made at the time the pupil is confronted with the practical problem to which they apply. We must not, however, confine our attention to present problems only. In the nature of the case only, a very small number of the actual problems of the shop will confront the pupil during the short time of any course. The pupil should have an active scientific solution of all the common problems that are liable to come in his course.



Application of Mathematics and Science.

## Scientific Attack

The pupil should:

- (a) Be able to follow clear directions.
- (b) To detect any small changes.

- (c) To reason from the very small to the large.
- (d) To judge accurately of results.
- (e) To reach accurate conclusions and to state them clearly.
- (f) To write out in clear, vigorous English the results of this observation.

If this power as above listed, is developed, the pupil will have initiative, be resourceful, and will not be afraid to tackle any problem.

### **A Course in English For Vocational High School Students**

The aims are:

1. To give a working knowledge of the mother tongue, both oral and written.

2. To learn how to organize thought into definite statements concerning the paramount interests of the student—vocational or avocational. The English department does not aim to offer instruction in shop theory or practice. That work is done by the competent instructors of shop work, hired because of their ability in their specialties. The English department teaches students to express their information in its relation with the world.

3. To broaden the horizon by introducing students to the best in literature, thereby providing for their leisure hours, showing them what others have thought and recorded, and giving them a common meeting ground with men and women of any craft or employment.

4. The course is so planned that a vocational student completing the ninth grade Vocational English may fit into the regular work without loss of time or credit. The work in Citizenship and Democracy may be substituted for the regular English work of the tenth grade. In the first half of the eleventh year the vocational students are again given instruction in separate classes. In the second half they are made to fit into the regular classes, as they must likewise do in their other work, if they are to receive a diploma of graduation.

Rooms for recitation work of such classes should afford a maximum of blackboard space. If possible, there should be chairs and tables or desks rather than regulation school desks, allowing greater freedom of motion.

It is not often practicable to segregate the classes strictly according to vocations. So, for the purpose of project work

and technical reports, it is better to ally them. For instance:

1. Trade Art (which has both boys and girls) works in with Vocational Sewing (all girls).

3. Auto shop and electricity, or auto shop and machine shop, or machine shop and pattern making work well together.

4. Electricity and agriculture have more in common than would at first seem.

The students thus learn a life lesson that no work is complete in itself; it must serve as a part of the whole. As for combined classes, i. e., boys and girls together, if the interests can be made common to both, the influence is often refining and mentally stimulating in affording competition, in the lower grades at least.

**The following represents a term's work in Ninth Grade  
Vocational English as given in Lincoln High School**

- I. Word Study and Spelling (continued 1 period per week).
- II. Reading (gives place to oral composition—"How to to Make, How to Do," based on trade or vocation).
- III. Usage. Ten weeks, with one period per week for oral composition (continued with greater emphasis, three periods per week; grammar, punctuation, letter writing). "Davis' Practical Exercises" offers valuable practice.
- IV. Literature. Five weeks. (Studied more intensively and discussed more technically in class study. A wider range is given the student in his choice of outside reading. Only four reports are required, and two of these may be oral, but always following suggestions as given in outlines for the different types of books.)
  1. Drama. Shakespeare—As You Like It, or Twelfth Night, or Midsummer Night's Dream, or Peabody—the Piper, or Knoblauch—My Lady's Dress, or Zangwill—"The Melting Pot."
  2. Short Stories. There are many excellent collections for high school use.
  3. Poetry. Teter—One Hundred Narrative Poems. Gayley and Flaherty—Poetry of the People (Revised). For outside reading, books listed in B9 may be read, but reports should be according to advanced form.



1. Oral review of a play or accepted cinema. Preferably modern one act.
  2. Written review of a short story. Suggested authors are Allen, Andrews, Aldrich, Barrie, Brown, Cable, Deland, Doyle, Davis, Foote, Gale, O. Henry, Harris, Hawthorne, Johnson, Kelley, London, Page, Poe, Rinehart, Robertson, Stevenson, Stockton, Smith, Stuart, Wilkins and Harte.
  3. Review of a poem.
  4. Magazine Report. Oral. Trade Journal. (May be substituted for one other.)
  5. Technical Report. Project method—written, illustrated if possible. Based on books given in Group X, Vocational B9.
- V. Projects. Specific assignments depend upon the student and the trade studied. Many books and magazines are consulted on some one line. Objective illustrations are sought, such as pictures, advertisements, articles, processes of construction, etc. This work is done with the co-operation of the shop instructor.
- Some suggested topics for Projects and Technical Reports are:
- A. Agriculture—1. The tractor. 2. Rotation of crops. 3. Analysis of soils, methods, value. 4. Use of electricity on the farm. 5. Breeding and points of breed. 6. The farm an economic necessity.
  - B. Art—1. The development of the alphabet. 2. Historical periods and effect upon art and architecture. 3. Practical application of art: to dress, to homes, to building. 4. Methods of dying. 5. Mediums used, paint, charcoal, etc.; their manufacture.
  - C. Auto Shop—1. Development of transportation. 2. economic effect of automobile. 3. Construction of automobiles. 4. Part played in late war by automobiles. 5. Different types of power. 6. The production of gasoline and oil.
  - D. Cabinet Making—1. Period furniture. 2. Methods of finishing. 3. Forestry, necessity for protection. 4. Woods: how to recognize them, their particular quality and values. 5. Interior decoration.

- E. Draughting—1. Effect of historical periods on architecture. 2. Relation of mathematics to draughting. 3. Relation of draughting to other industries.
- F. Electricity—1. Life of Edison, of Morse, of Marconi, of Bell. Evolution of lighting systems. Development and use of electricity for power. Use of electricity for heating purposes. The telephone, the telegraph, wireless, use of electricity for the farm, in the home, the development of the dynamo, etc.
- G. Machine Shop—1. Manufacture of iron, of steel, of brass. 2. Welding: acetylene, electrical. 3. Inventions and inventors. 4. Economic value of machinery: (a) Small tools vs. Machinery; (b) Man power vs. Machinery. 5. A visit to a well-equipped machine shop.
- H. Pattern Making—1. Relation to other crafts. 2. Ship-building.
  - 1. Printing—1. History of the alphabet. 2. History of printing. 3. Development of printing press. 4. Paper, manufacture of. 5. Development of linotype. 6. A visit to a large daily paper, showing economic value of printing.
- J. Sewing—Lace—kinds and manufacture. Periods, effect upon costuming. Relation of art to dress. Fabrics. Opportunities afforded by trade. Development of sewing as a craft. Invention of needles, pins, thimbles, sewing machines.
- K. Sheet Metal—1. Relation of sheet metal to automobiles. 2. Finishes—Lacquers, enamels, paints, etc. 3. Relation of sheet metal to architecture. 4. Historical origin of conventional forms of cornices, etc.; influence of Greek, etc. 5. Manufacture of tin, zinc, iron, lead, solder. 6. Mining. 7. Properties of metals, of acids. 8. Relation of sheet metal to farming.

### Citizenship and Democracy (Tenth Grade)

Aim: The aim of the instruction in citizenship is to develop the boy and girl in the practice of good citizenship.

- 1. To point out to the boy and girl better uses for leisure time.

2. To aid in the wise selection of moral principles for standards of conduct.
3. To establish economic habits necessary for efficiency in production and in citizenship.
4. To acquaint the boy and girl with the principles rather than with the machinery of our democracy.
5. To direct the boy and girl in thinking intelligently and in forming judgments based upon facts.
6. To get the boy and girl to look at civic relationships from the point of view of responsibilities rather than of rights.

### Materials:

- I. Citizenship B10: (a) Texts used by every student—Hughes Community Civics, The Independent (New York) (10-15 issues). (b) Texts used by all who can be encouraged to do so—Daily papers, current magazines, good books in home, school and public libraries.
- II. Democracy A10: (a) Texts used by every student—Tufts The Real Business of Living, The Outlook (New York) (10-15 issues), Greenlaw's Democracy. (b) Texts used by all who can be encouraged to do so—Daily papers, current magazines, good books in home, school and public libraries.

### Methods:

- (a) Principles on which based: 1. A "pulling out" process rather than a "pouring in" process. 2. The use of cases, illustrative of economic and political citizenship, selected from the experiences of the boys and girls. 3. Each boy and girl is a citizen **now** with many opportunities daily to practice **good** citizenship.
- (b) As used in the class room: I. Printed or mimeographed lesson sheets have been found the most effective means of developing the thinking power of the boys and girls. These sheets contain questions, facts and supplementary material of value in promoting better citizenship. The advantages of these lesson plans are numerous: They give concrete problems with which to work; they sustain interest by constant change and development; they permit the boy and girl to choose somewhat the content of his day's lesson and he knows when he has finished it; they permit the use of individual standards in grading, encourage the boy and girl to do better work, and take



care of the dull as well as of the bright pupil; they enable the teacher to talk less and yet accomplish more since something tangible is left in the hands of each student; they help to tie together group discussions. II. Written. Each day the student writes on at least four questions. Usually two of the questions are specified by the teacher, the other two being left to the student's choice. He is also encouraged to answer additional questions for added credit or the "make-up" work. This gives the student a daily test of his ability to think, to make use of his reading, experience and observation, to use the facts and principles gained from group discussions and from previous study, and to express his thinking clearly. Part of the 45-minute period is allowed the student for doing this work. III. Oral. The mimeograph lesson-sheet serves as the starting point for this work and at once centers the attention of the group on a given question, principle or lesson. The aim is to have the student talk to the class rather than "recite" to the teacher. The practice thus gained in thinking, in speaking and in making himself understood by others is especially worth while for the boy or girl in vocational work.

- (c) As used in the school. A plan is being developed for giving recognition to the fact that citizenship is not a one-period subject, but an all-day, every-day matter. The plan calls for reports on the student's practice of good citizenship in his other classes and school activities. These reports will be taken into account when making the grade for the semester. The members of the class agree that such a plan will be a means of promoting better citizenship.
- (d) Conclusion. The "recitation" hour, through the combination of written and oral work with the resulting opportunity for the teacher to give individual help, becomes a workshop period that promotes the attainment of the aim of the course.

### Sample Lesson Sheets

#### Democracy

What attitude shall the government take towards private business? Study Tufts, pp. 228-233.

- A. During the Middle Ages and to the 17th century.
- B. 1066-1890. The Policy of Let Alone.

- 1. Questions for discussion: (a) What are the big ideas given in Adam Smith's "Wealth of Nations"? Impor-

tance? (b) Was the policy of let alone popular with the people during the 18th century? Give as many reasons as you can. (c) Is government a servant or a tyrant? Five reasons. (d) What arguments were used by Adam Smith and his followers to prove that the nation would prosper most if each fellow looked out for himself. (e) Is the let alone policy out of date for use at present and in the future? Why? (f) Do you believe in these theories of Adam Smith?

2. Conclusions: (a) Do you believe that personal liberty and competition are all that we need today to secure justice and public welfare? Use 50 words. (b) Would the economic problems of today be solved successfully if we applied the theories of Adam Smith?

### Citizenship

How Our Government Get and Spend Money (Study Hughes, pp. 300-303).

1. Do you believe that a fellow should learn how to spend money as well as how to earn it? Why? Five Reasons. What is there to learn about how to spend money? Can you suggest some of the principles a fellow should follow?
2. What is the general property tax? Is it satisfactory? Why?
3. What is the single tax? Give at least two arguments for and two against it.
4. Should city, county, state and national governments draw upon the same sources to get money? Why?
5. Which is more important, a wise and efficient system of spending public money or a wise and efficient system of getting the money through taxation? Explain.
6. Should we object to high taxes? Five reasons.
7. How does the purchasing power of our money when spent for taxes compare with its purchasing power when spent for other things? Conclusions?

### Occupations

The study of occupations in the Los Angeles City Schools holds an unquestioned place in the Junior High School curriculum, but the hours per week and the particular term in which the work is required still vary somewhat. In most schools,

however, Occupations is a two-hour subject for one semester and is given in the lower eighth grade.

The subject matter also varies considerably as does the method of presentation, but in general there is an effort on the part of the teacher to induce each child to think about the work and workers of the world and to make more definite the somewhat vague longings for a place in the industrial, business or professional group. Some teachers rely largely on the information they are able to draw out of the experiences of the members of each class, others lean rather heavily upon what may be found in the adopted text book (Giles Vocational Civics), still others attempt to impart information gathered by Saturday trips of investigation. Most of the teachers apparently use all of these methods in gathering information. Monthly conferences of all the occupations teachers of the Junior High Schools have led to a very helpful exchange of information and of methods of presentation.

In most of the schools some note book work is required, a term paper on some particular occupation investigated by the pupil, at least one magazine, and one book report are insisted upon.

The occupations teachers feel that two hours per week for one semester only is not enough time to devote to this important subject, but the curriculum is so crowded that the time allotted has not been increased.

The Board of Education has felt the importance of giving children during this formative stage of development true and definite information regarding work, wages, and opportunities in and around Los Angeles at the present time; and, in order to secure this information, has appointed from the group of occupations teachers, one teacher to gather data during the summer for the benefit of all the teachers the following semesters. This teacher is known as the temporary occupational coordinator, and is paid for making the survey at the same rate as his regular day school teaching salary.

### **Special Cooperative Classes for the Training of Adults**

During the past year a scheme of cooperative Training has been introduced in Los Angeles in which the Industries of the City, the Chamber of Commerce and the Board of Education are taking an active part. In this training, the Industries furnish the equipment and most of the supplies, the Board of Education furnishes the instruction and needed buildings, while the Chamber of Commerce, through which this movement was made possible, cares for the publicity and any other service necessary for successful Vocational Training.





The Garment Industry Is Dependent Upon These Women.

Four cooperative classes were organized during the year 1920-21. Two in Power Sewing Machine Operation, in which the Garment Manufacturers of Los Angeles furnished all machines and materials, such as cloth, thread, etc. The Board of Education rented a building for this purpose and furnished light, heat and instruction. Over 600 women were trained during the year, most of whom received employment in the garment factories or went into business for themselves.

A third class was organized for Painters. The Board of Education turned over a whole school building for this purpose and employed the very best man available from the trades as instructor. This work is both trade preparatory and trade extension. Men following the Painting trade added materially to their wages since taking this training. The Master Painters and Paint Dealers furnished most of the paints and other material for the work.

A fourth cooperative class was organized for Laundry workers. This work is mostly trade preparatory, the training preparing for the work in the Marketing and Distributing Departments. The Crown Laundry, under the management of Mr. Stevens, has turned over its entire plant for two hours a day for this instruction. Mr. Cooley, Superintendent of the Crown Laundry, was made instructor.

For information concerning these cooperative classes, apply at the Department of Vocational Education, 451 N. Hill Street, or phone 15167.

### **Course for Adults in Power Sewing Machine Operation** (Single Needle Machine)

#### **Lessons:**

1. (a) Mechanical use of machine.  
(b) Stitching without thread, getting accustomed to treadle and power.
2. (a) Threading machine and bobbin.  
(b) Placing bobbin.  
(c) Correct placement of threads (upper and under) to commence stitching.
3. Use of knee lift.
4. Correct placement and holding material.
5. Stitching short lengths (12 to 15 inches).  
(a) Striped material.  
(b) Plain material.
6. Correct way of removing work from machine.  
(a) Position of threads.  
(b) Use of knee lift.

- (c) Breaking threads.
- (d) Cutting threads.
- 7. Winding bobbins and use of transmitter.
- 8. Backstitching or stay stitch.
- 9. Turning hems without hemmer.  
1 in. hem,  $\frac{1}{4}$  in. hem,  $\frac{1}{2}$  in. hem.
- 10. Making a simple article requiring straight stitching only.
- 11. Stitching short lengths; 1 in.,  $\frac{1}{2}$  in.
- 12. Names of parts of machine (head, wheel, take up, tension, foot, needle).
- 13. Use of tension.
- 14. Adjusting tension to suit material and thread.
- 15. Cleaning and oiling machines. Removing belt (danger in).
- 16. Turning square corner.
  - (a) Position of needle.
  - (b) Use of knee lift in turning corner.
- 17. Stitching a circle.
- 18. Turning a round corner.
- 19. Kinds of seams (practice).
  - (a) Raw.
  - (b) French.
  - (c) Flat felled.
- 20. Shirring without attachment.
- 21. Name and use of attachments.
  - (a) Hemmer.
  - (b) Ruffler.
  - (c) Binder.
  - (d) Gauge.
  - (e) Hemmer foot.
  - (f) Shirring foot.
- 22. Using hemmer attachment.
- 23. Using hemmer foot.
- 24. Using ruffler.
- 25. Using shirring foot.
- 26. Using binder.
- 27. Using gauge.
- 28. Continued lessons in proper holding of material.
- 29. Lessons in joining of material (Bias and straight edge).
- 30. Setting sleeves.
  - (a) French seam.
  - (b) Flat felled.
- 31. Handling to save time.
- 32. Counting, stocking, etc.
- 33. Demonstrating speed, handling, etc.





The More They Learn, the More They Earn.

## **The Universal Need for Painting and Decorating**

"When we look around us we are impressed with the fact that nearly everything we see is covered with paints, stains or varnishes. The trade of Painting and Decorating embraces in its scope all the beautiful hardwood finishing we observe, and frequently its restoration; all the beautiful interior decorative and similar work we find in public edifices; all the exterior coating of the millions of dwellings and other structures.

If by some catastrophe we were to be deprived of paints and varnishes, a large percentage of our wonderful public buildings would gradually fall into decay. The beautiful National Capitol at Washington is carefully preserved through repainting every three years, otherwise its crowning glory, the dome, which is of iron construction, would soon succumb to the deadly corroding effects of the elements. The entire inside of the dome is decorated in paints by Painter Brumidi."

The rapid growth of Los Angeles as evidenced by its great building record and its many elaborate and expensive new homes, emphasizes the need of painters and decorators in great numbers. It is generally recognized that there is a great scarcity of skilled painters in this city. The special classes are organized to, in a measure, supply this demand.

For further information and special literature, apply at the office of the Vocational Director, 451 N. Hill St. Phone 15167.

### **Prevocational Courses in the Junior High Schools**

It is unnecessary to review the purposes of the Junior High School for professional readers in the Los Angeles system, where this new type of school was nurtured in its infancy and has been ever since carefully tended and developed. It may be desirable, however, to remind ourselves that these schools throughout the country are trying to meet their peculiar problems by new and varying devices. These peculiar problems arise out of the grouping together of boys and girls who are no longer just children and who, nevertheless, have not yet arrived at the state of young manhood and womanhood. At this period of their lives, they are not content to continue to receive whatever a teacher and a book may have to offer, but, on the other hand, they have not the judgment to observe carefully and act upon their observations with discretion. They are, in fact, beginning to look abroad upon the world and see what it offers for them in the way of a life career.

Those who have worked with the children of the Junior High School have felt peculiarly the need of guiding and helping them, but at the same time have feared that this guidance

might easily become the domination of the ideas or even prejudices of the one or two persons charged with this responsibility. It is for this reason that it has seemed necessary to develop the course of study in such a way that the students would have placed before them such information and opportunity for exploration that they may judge, in at least a small measure, of the desirability of certain things for themselves, this desirability being determined partly by their own satisfaction in what they have discovered and partly by the world's judgment of its worth. In order to meet the requirement of presenting prevocational information to students, courses dealing with occupations have been introduced at a point in the course of study where it will be of most benefit in helping the child select his electives intelligently and so determine in some measure his future course of study and therefore his preparation for life.

It is the purpose of these classes to give the students as fully as possible a few of the leading types of occupations, including business, industry, and the professions. As far as possible this is worked out in particular for Los Angeles and vicinity. It is not the purpose of this work, however, to bring about a definite decision upon the part of the pupil as to what shall be his lifework. This is rather a prevocational opportunity, helping him to survey the field of the world's activities as fully as he is able in the seventh or eighth grade.

The work mentioned in the foregoing paragraph must necessarily be limited and more or less academic. It does not provide much opportunity for the child to exercise himself in a variety of activities or to undergo a number of experiences of different types which might assist him in determining his own fitness for some one thing which would be typical of a group of occupations. It was hoped when the Junior High Schools were first organized that the presentation to the student of a number of courses of study, possibly amounting to five or six, and a number of electives within each course of study would provide opportunity for diversified experience and explorative activity which this type of school was expected to bring to the educational world. As a matter of fact, the choosing of one course of study from among several does not constitute experience in the several. In like manner, the choosing of one elective from a group of electives gives no opportunity for exploration in the whole group. Furthermore, the whole pressure of the administration of schools where several courses are offered with electives within each course is to have the child continue with the course which he begins and to continue the elective which he begins. This pres-



sure comes not only from the school, but from the home and from society in general because it is generally felt that shifting from course to course and subject to subject is a loss of time. Moreover, the child feels that by stopping an elective at the end of a year he is admitting failure and is dropping behind in the race toward the goal of graduation. Since, too, most of the electives lead directly to high school courses in the same or similar subjects, it has seemed desirable to pursue the elective begun until the Senior High School has been entered.

To meet a situation containing these difficulties has involved a deal of investigation and careful thought. In the first place, it is difficult to shift from courses which have been organized and administered carefully for years to some of a different type. In the second place, the arranging of courses which would involve for each student any considerable variety of subjects means breaking away from the traditional hard and fast year units which are so dear to the hearts of most of us. In the third place, it is a very genuine difficulty to find teachers who can with a group of pupils shift easily and frequently from one subject to another to the continued advantage of the pupils. In the fourth place, if these short units are to involve manual subjects, it means that considerable money must be put into equipment. In the fifth place, with schools as crowded as they have been in the past two years, and with no relief yet afforded, the difficulty of finding room for additional equipment has been very acute. Sixth, the interests of pupils in schools located in entirely different parts of the city are so diverse that the program of work planned for one school will not meet the needs of others.

The first point of attack and of departure was the traditional course in woodwork. Formerly, every boy was required to fit himself into this one straight jacket throughout the three years, no matter what his other interests. It was felt for years that the boys were overfed on this one sort of thing and lost interest so completely, in fact, that when they arrived at the Senior High School, they had no more use for this type of work and the result was that the woodwork courses in the Senior High School were dwindling away very fast. The obvious thing was to cut down the amount of woodwork given and to add such other shop units as could be organized.

One school has organized shop units for boys in cement and concrete work, simple electrical wiring and battery work, forge work, wood work, sheet metal work, and household mechanics. A certain amount of reed work is incidental to the woodwork. The term "household mechanics" includes such

ordinary mending and repairing as a householder is called upon to do. Students are encouraged to bring bits of repairing from home to do at school. They are taught to use a soldering iron and to make small plumbing and glazing repairs. Another school is at present organizing units in shoe repairing, sheet metal work, printing, reed work, woodwork, and electrical work. The printing and reed work are open to girls as well as boys. This same school has organized a very unique prevocational class for girls in which the aim is to give the girls as great a variety of preparation for home making as possible, including even the raising of flowers and vegetables. In this connection, it must be pointed out that printing is one of the lines of work in which ten weeks is so short as to be of little value. This unit may have to be extended in all of the schools which are offering the work to at least one year. It is quite possible that as the plans work out, everyone will not be required to do this work. The work, however, has such fine values for other than vocational purposes that as many as possible are being directed to it.

Another school is beginning with a semester of woodwork and is following this up with ten-week units in sheet metal, household plumbing, elementary electricity, automobile work, cement work, and printing.

It must not be thought that only the subjects which are peculiarly shop subjects are being organized upon this basis. One of the schools has organized prevocational units for boys in typewriting, printing, mechanical drawing, agriculture, sheet metal, applied science and woodwork and for the girls in typewriting, agriculture, cooking, sewing, freehand drawing, millinery and art metal work.

Still another school, somewhat limited as yet in equipment, has in addition to its woodwork and home mechanics classes in agriculture to which are sent the best and the poorest from the woodwork class, the former because they have finished practically all the necessary work, the latter because it is hoped they may be saved by giving them work out in the open.

In summing up the work as thus far organized and planned, we are struck with the fact that much more has been done for the boys than for the girls, possibly because that was the line of least resistance. Principals report that instead of the lethargy and indifference so often seen before, students are keen to make the most of the ten weeks which they have because they know that they may not come back to that particular line of work. The attitude of principals can be best summed up in the comment of one principal who said that he felt it was the best thing which he had undertaken in years.

# **Short Prevocational Courses Offered in One of Los Angeles' Junior High Schools**

Boys		Girls	
	No. Weeks of four 40 Min. Periods		No. Weeks of four 40 Min. Periods
	B7		
Bookkeeping	10	Bookkeeping	10
Mechanical Draw.	10	Typing	10
	A7		
Agriculture	10	Sewing	12
Woodshop	10	Costume Design	8
	B8		
Electricity	10	Cooking	15
Sheet Metal	10	Science	5
	A8		
Cement	10	Household Mechanics	5
Woodshop	10	Cooking	5
		Sewing	5
		Textiles	5
	<b>9th Grade</b>		
Woodshop	20	Cooking	20
or		or	
Forge	20	Sewing	20

Courses to be Organized Later:

- Printing
- Auto Mechanics
- Plumbing
- Painting

## **A Brief Outline of Some of the Courses Offered Agriculture**

- I. Soils—Simple experiments of soil with water, air, bacteria and improvement of home soils.
- II. Plant life in relation to soil, sunshine, air: Experiments testing seeds, some work in lathhouse.
- III. Farm Crops—Stories of industries, importance in locality.



- IV. Animal Industries—Stories of care of products, sale, etc.  
**Note:** During the course pupils make scrapbooks of pictures, short stories on each topic studied, specializing on the one they are most interested in.
- V. Home project work is carried on throughout the year.

### Bookkeeping

- I. Scope.
  - A. Pupils perform imaginary business transactions and
  - B. Record these same transactions in the simplest forms of accounts (cash book and ledger or ledger only), and
  - C. Make a simple statement showing profits, losses and net profits.
- II. Results to be obtained.
  - A. New interest in school work.
  - B. Problems in arithmetic are made concrete.
  - C. Basis for choice of B8 electives.

### Textiles

- I. Includes a study of materials suitable for underwear, simple school dresses and household articles.
- II. Discussing suitability, price, durability and labor in laundering and cleaning.
- III. Practical household tests for purity of fabrics.
- IV. Comparison of hand made and commercial trimmings as to wearing qualities and artistic values.

### Electricity

- I. Nature and source of electricity.
  - A. Kinds and how developed.
  - B. Uses.
  - C. Lightning and lightning protection.
  - D. Distribution—Power stations, power lines, sub-stations, etc.
- II. Units of measure.
  - A. Volt. 2 Ampere, 3 Watt, Kilowatt, 4 Ohm.
- III. Primary and Secondary Cells—Batteries and magnets. Testing in volts and amperes. Computing Watts. Motor reading.
- IV. General principles of dynamo and motor.
  - A. Direct and alternating currents.

- V. Conductors and insulators.
- VI. Transformers, rectifiers, rheostat.
- VII. Automobile electric system.
- VIII. Bell wiring.
- IX. General idea of house wiring.
  - A. Explanation of materials and their use.
  - B. The more common code rules.
- X. Wiring of electric light fixtures.
- XI. In connection with the above work and carried on at the same time, pupils will construct one or two pieces of electrical apparatus of their own choice, such as an electric toaster, heater, motor, dynamo, transformer or wireless apparatus, and assist in repairs of electric bell and lighting systems in the school.
- XII. **Note:**

It is expected to give only the elementary principles in electrical work with only the more common technical terms and those carefully described and illustrated and all associated as much as possible with the activities of daily life. In other words, to carry out the plan of as many interesting points of contact as possible rather than to specialize in a single thing.

### **Cement**

- I. Reasons for concrete—ease of manipulation, durability, sanitary value, etc.
- II. Its composition—cement and different aggregates.
- III. Its proportioning and consistency for different projects—sidewalks, walls, posts, ornamental work.
- IV. Calculating quantities for different undertakings—what would be the cost of a sidewalk, a fence, a wall, etc.

### **History**

Ancient, baths of Nero and Pyramids, puzzatone.

Cement from volcanic ash. A lost knowledge until modern times, new methods and applications.

The purpose is to at once compose a substantial mixture and apply it in a walk, wall, fence, etc., giving the pupils actual contact and appreciation before taking up much theory; they are then better able to understand and retain the nomenclature, enabling them to read intelligently the abundance of literature on the subject.

## Household Mechanics

- I. Selecting a house.
  - A. Foundation, examination for settlement, ventilation of floors.
  - B. Arrangement of rooms.
    1. Utility
    2. Bedrooms on east as far as possible.
  - C. Roof, quality and condition of covering.
  - D. Plumbing, quality of fixtures and workmanship.
  - E. Gas and electric light.
  - F. Ventilation and position of windows—ventilation of clothes cupboards.
  - G. Floors and inside finish.
  - H. Condition of painting and outside work.
- II. Care of Plumbing.
  - A. Faucets, how repaired.
  - B. Sinks—Trap, its use, how cleaned and assembled.
  - C. Location of shut off valve, how operated in case of accident.
- III. Electricity.
  - A. Location of meter and main switch.
  - B. Fuses, uses, danger of using too strong fuses.
  - C. Care of electric machines used in the home.
- IV. Gas.
  - A. How to repair leakage in gas valves.
  - B. Location of meter, how to turn off gas at meter in case of necessity.
  - C. Cautions—Do not look for leakages with a match.
- V. Care of Hardwood Floors.
  - A. Cleaning, shellacing, waxing.
  - B. Linoleum, shellacing.
- VI. Furniture.
  - A. Utility first.
  - B. Differences in varnish, shellac and enamel finishes.

## Practice Work

Simple project which will require the use of tools used in the home. (Plane, screwdriver, hammer, wrenches, saw, soldering.)

## Cooking and Science

**Aim:** To show that cooking is a combination of science and art. In science foods are classified, effects of heat noted



and results applied in cookery lessons. Formulation of recipes from experiment: "freehand-cooking" instead of "cookbook cooking"; discrimination in and modification of recipes.

### **Points of Interest**

The work of replacing broken glass in the building is done by the school.

All necessary repairs to furniture are made by the school.

Students have built lathhouse, baseball back stops, basketball goals, cupboards, ironing boards, book racks and magazine racks and work tables for sheet metal room, making gas connections and putting in fittings for gas plates in sheet metal room, making and repairing electric connections; all new and repair work that contains educational possibilities is considered as most essential.

Cement classes have made plant pots, seats, retaining wall and repaired sidewalks.

Both boys and girls are encouraged to bring articles from home for repair and reconstruction.

Children perform clerical work, attend telephones, work in book store, treasurer's office and library and receive some credit. The Student Body is simply but democratically organized and assumes certain financial and administrative responsibilities.

### **Our Evening Schools**

During the past year, eight of our high schools offered evening instruction. The average attendance in these schools ran from a couple of hundred to over two thousand, Polytechnic having the largest attendance.

An evening high school offers one of the best opportunities for presenting vocational, continuation and vocational try-out courses. The student comes with a purpose and a determination, having usually decided in his own mind just what training he wishes to pursue. Many come to better themselves in a chosen occupation, while others wish to prepare for a new vocation. Because of the heavy demand for vocational training, our evening schools are featuring such instruction. The most able instructors available are employed, it being necessary to call them from many various professions.

The following is a brief account of the vocational training at Polytechnic Evening High School, as reported by Mr. Vierling Kirsey, Principal:

It may be roughly stated that the Vocational work in the Polytechnic Evening High School is divided into three classes:

first, the Industrial Vocational; second, the Commercial Vocational work, and third, the Vocational Homemaking work.

INDUSTRIAL VOCATIONAL WORK covers the following departments, with an enrollment as given.

	No. Enrolled
Architectural Drawing	
Blueprint and Detail . . . . .	201
Assaying, Wet and Fire . . . . .	33
Automobile	
Automobile and Gas Engine	
Theory . . . . .	172
Aeronautics . . . . .	18
Ignition and Starting (Shop and Lecture) . . . . .	235
Electricity	
Direct and Alternating . . . . .	147
Wiring—Practical House . . . . .	74
Applied Physics . . . . .	36
Mechanic Arts	
Machine Shop . . . . .	150
Wood Working—Turning, Pattern Making . . . . .	172
Trades	
Blacksmith . . . . .	81
Oxy-Acetylene . . . . .	129
Vulcanizing . . . . .	62
Commercial Photography . . . . .	114

Supplementary related subjects with related work to accompany as follows:

Mechanical Drawing . . . . .	86
Mathematics—Applied . . . . .	56
Mathematics—Technical . . . . .	117
Strength of Materials . . . . .	27
Concrete Construction . . . . .	26
Chemistry . . . . .	147

Industrial Vocational work in Polytechnic Evening High School is entirely of the continuation type; that is, in all cases those who are directly engaged in the trades in the daytime are allowed to enroll in our Evening High School Trade Vocational Classes. The following application form is a type of that required in these classes.

APPLICATION FOR ENROLLMENT IN  
POLYTECHNIC EVENING HIGH SCHOOL  
MACHINE SHOP COURSE

.....1921.

Name..... Address.....

Phone..... Age..... Native State or Country.....

Evenings Preferred... How far did you go in School...

How far have you gone in Arithmetic:

- |                   |              |
|-------------------|--------------|
| 1. Addition       | 4. Division  |
| 2. Subtraction    | 5. Fractions |
| 3. Multiplication | 6. Decimals  |
| 7. More advanced  |              |

Can you read Drawing or Blueprints.....

Describe fully your present job.....

What other jobs have you held in Machine Shop.....

Your present employer.....

Employer's address.....

Remarks and special reasons for considering your appli-

cation for enrollment:.....

NOTE TO EMPLOYER OR FOREMAN: The School aims to give courses of direct benefit to this man in your shop. We keep a card showing his progress. The School asks you to consider him for advancement.

.....  
Signature of Foreman or Employer.

This application does not guarantee enrollment. Applicants will be accepted in the order in which they can be accommodated by the Shop. Special consideration is given to those men enrolled in related courses in the Evening High School.



COMMERCIAL VOCATIONAL WORK is given in two divisions:

(1) That of a Continuation type, or where students who are working during the day, come to Polytechnic Evening High School to better their skill or advance to higher position.

(2) That work which takes students, desirous and determined to enter the field of commerce, and who are now in another or a related field of work. These prepare for positions in the field of Accountancy, Bookkeeping and Recording activities; office direction, clerical, merchandising, shipping and trade. A study of the table presented will show which subjects are planned for each of these divisions.

Bookkeeping . . . . .	354
Cost Accounting . . . . .	114
Business Law . . . . .	120
Civil Service . . . . .	155
Stenography—Theory . . . . .	247
Stenography—Dictation . . . . .	117
Typewriting . . . . .	398
Salesmanship . . . . .	305
Commercial Office Training . . . . .	40
Traffic Management . . . . .	75
Journalism . . . . .	43
Commercial Art . . . . .	27
Commercial Bacteriology . . . . .	18
Office Machine Practice . . . . .	23
Supplementary related subjects:	
Business English . . . . .	55
Penmanship . . . . .	165
Commercial Arithmetic . . . . .	72
Public Speaking . . . . .	76
Psychology . . . . .	37

HOMEMAKING VOCATIONAL WORK is the newest group of vocational subjects to be presented and is the group which is growing most rapidly. Originally such homemaking subjects as were given under the topics of dressmaking, millinery, etc., were given with the method of instruction in mind of helping the individual to produce a finished product.

Under the reorganization, this work is now presented with the sole subject of giving the individual the ability to produce, under home or other conditions, such products and related products as come in the field of the course presented. In plain words, the pupils came formerly to get help in making a hat, now they come to learn to make hats.

These homemaking courses have grown extensively. Now a majority of the enrollment is in the morning and afternoon State-aided Classes. Our endeavor has been to distribute this instruction to districts where Evening School work is not offered and where the general homemaking instruction is limited. The following list and classification offers evidence of the scope and popularity of this work.

The amount of State reimbursement due these classes for this school year will amount to \$2350. This fund is for those classes in homemaking conducted during the day only.

Sewing .....	286
Millinery .....	1326
Cookery .....	162
Dietetics .....	22
Applied Art.....	123
Laundry Instruction .....	26
Home Nursing .....	36
Related subjects:	
Basketry .....	76
Chemistry for Nurses.....	58
Bacteriology .....	28
Drafting and Designing.....	38

A certificate, as shown, is granted all students completing vocational courses upon the presentation of the following application properly filled out.

As a rule, students are rarely allowed to repeat vocational courses they have once satisfactorily completed.

The vocational and academic departments of the school coordinate and correlate thoroughly. The academic departments are listed and presented as a matter of general education. These departments offer ample opportunity for students to meet the major requirements for High School Graduation and University entrance requirements.

English .....	Grades 9 to 12	4 years of work offered
Mathematics .....	Grades 9 to 14	6 years of work offered
Science .....	Grades 10 to 14	4 years of work offered
History, Civics and Economics	Grades 11 and 12	2 years of work offered
Music .....	Grades 10 to 12	2 years of work offered
Languages .....	French, 9 to 12	3 years of work offered
	Spanish, 9 to 12	3 years of work offered

Los Angeles City School District  
POLYTECHNIC HIGH EVENING SCHOOL

.....192...

We Guarantee That.....

Has completed, in a satisfactory manner the course in

.....

Prescribed for this school by the Board of Education.

.....

Principal.

Teacher.

WHAT OUR GUARANTEE MEANS:

1. That the course pursued was thorough, practical and complete.
2. That the course was completed in a satisfactory manner, with due sincerity and interest.
3. That the bearer of this card is of reputable character, honest and industrious so far as we have ascertained.
4. That the members of the faculty of this school will give further statement upon request.
5. The bearer is recommended for position as

.....



APPLICATION FOR POLYTECHNIC EVENING HIGH  
SCHOOL CERTIFICATE

.....  
Name Date

.....  
Address Phone

I hereby apply for a certificate in.....

My qualifications are as follows:

Polytechnic Evening High School Record:

Subjects taken..... Teachers:.....  
.....

Date entered Class.....

Previous Education..... Time.....  
.....

Position held during day.....

Occupation.....  
References as to character:

.....  
Name Address Phone

.....  
Name Address Phone

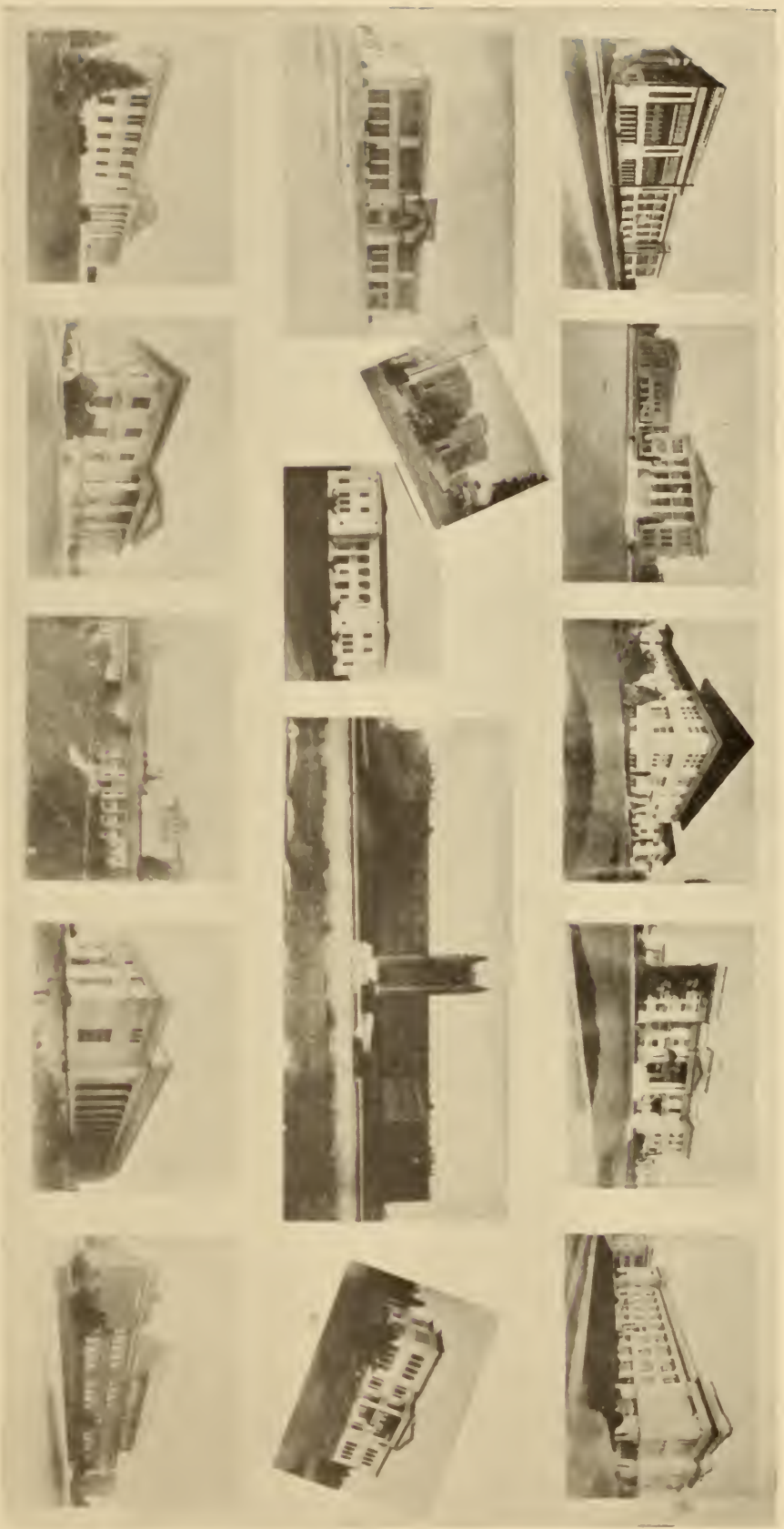
Recommended by Instructors (not less than two):

1..... 2.....

(1) In making this application students must have attended Polytechnic Evening High School regularly for 80% of the evenings enrolled for one semester at least.

(2) Standards of completion and recommendation for certificates will be established by the instructors in all classes.

Granted by..... 1922



A GROUP OF LOS ANGELES' SPLENDID HIGH SCHOOLS







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